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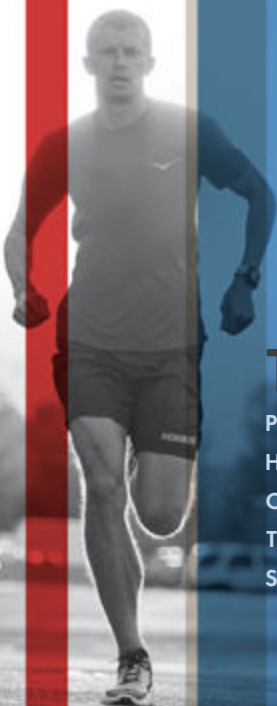
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# A Sick Kind of Joy

RUNNERS CAN BE DIVIDED BETWEEN THOSE WHO love the track and those who hate it. For much of my life, I was in the latter group.

The track is a celebration of speed and athleticism, and I, like many others who end up as distance runners, was never very athletic or fast. Most of my memories of track races are of being dropped—then lapped—by speedy competitors. In track workouts, training partners I can outlast on the road and trail show me their heels as they pull away effortlessly.

In contrast, Associate Editor Liam Boylan-Pett says he'd much rather run a workout like 10 x 400m on the track than a 16-mile long run. Of course, his mile PR (3:57.75) is close to a minute faster than mine and he's usually the one lapping others. Liam is successful on the track—it's a celebration of what he was born to do.

But even slow-twitch runners like me can relate when Liam says he finds "a sick kind of joy" on the track. Despite my lack of speed, I've also learned to relish the oval, following some key principles.

The first step is to ditch comparisons. I, too, can feel successful on the track, zipping along the flat, firm, groomed-for-running surface, hitting goal splits, and setting PRs. But I can't appreciate that success if I'm looking at the Liams of the world. And, while on the road they disappear out of sight, on the track they circle around to rub it in every 400m. The solution? I tell myself that every faster guy on the track has someone in the world who is as far ahead of him as he is of me, then I ignore him.

The second key to track happiness is to dial in the level of effort. It is easier to get out of your depth with speed than with distance—the setting and the short time frames lure us to fly, then we suffer trying to keep it going. When reading workouts done by the elites (like those in our story on world championship medalists starting on page 62, or even top masters' training like Sonja Friend-Uhl's on page 40), I have to look carefully at how their split times compare to their race times, and their volume to their total miles. If I scale

my workouts proportionally to my race times and volume (reminding myself to be honest), the work is suddenly doable—not easy, but within my grasp. When I hit the sixth of eight repeats on-pace, and realize, no matter how difficult, I am doing this—I feel the joy.

Third, we have to make peace with the kind of pain brought by speed. The ability to go long requires enduring body- and mind-sapping fatigue, but the lung-searing, muscle-burning, panic-inducing pain of going fast is much harder for some of us to take. We're used to being able to envelope the pain, to tell ourselves we can survive it for as long as it takes. The severe discomfort of the track cannot be mastered; we know it will win in a matter of moments. But those moments are all we need: Track workouts are short and intense. Loving the track requires effort that pushes over the red line.

As that line gets redefined, I discover that I have overcome another fear and become master over more of myself, which is a big reason I love running. And, there's a nice side effect. A few days after a track workout, I'll head out for a daily run and suddenly feel lighter, bouncier, more powerful, and even something I never thought I could be: fast.



**Jonathan Beverly**  
Editor-in-Chief

## CONTRIBUTORS



**Cathal Dennehy** represented Ireland in international competition five times before injury forced him into early retirement. An award-winning journalist, he has worked for the *Sunday Tribune* in Ireland and *Irish Runner* magazine. Dennehy profiles Nick Willis in this issue, and says of the champion miler, "Despite the fame and wealth, he didn't have an air of superiority that you find with some top athletes. Willis' main advice to young runners is, 'Surround yourself with people from all walks of life, all ages, because it makes a much more healthy foundation to handle the highs. It's not a case of if, but when, things go wrong. It can be a lonely place if you don't keep things in balance.'"



**Kyung Soon Park** illustrates *Personal Record*. Park graduated from Ontario's Sheridan Institute of Technology and Advanced Learning in 2007. For Park, running is a form of meditation; it helps her to work through problems. She enjoys how *Personal Record* allows her to experience the sport through the eyes of her fellow runners.



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# CONNECT



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## ON NEWSSTANDS NOW

Check out the July issue of *Runner's World* for tips on how to overcome your mind's tendency to slow you down. Plus, make your hill workouts tougher by doing them on sand. Read how famed coach Percy Cerutty used sand dunes to build speed, strength, and endurance.

## Aging Gracefully

Thank you for the story "Mastering the Ages" [March/April 2015]. You have provided information that those of us over 70, regardless of ability, can use to modify our training. Having fought through esophageal cancer and open heart surgery, I no longer can compete at my previous level, but your article gives me the inspiration to continue stepping up to the starting line at age 75.

**Ken Simpson /**

Charlotte, North Carolina

The article "Mastering the Ages" is hard to read as someone who is just getting back into running. How about having a master who has just taken up or returned to running write an article?



I did a bit of running in my late 20s, but for about 30 years I ran only every once in awhile. I thought I was going downhill physically, and it was just common knowledge that this is what happens. Instead, once I started running, I eliminated a 20-year lower back problem, eliminated 15 years of arthritis in my back, and lost 30 pounds. I was never particularly speedy or strong, so I suspect I can see improvements for a few years. I do like the notion of "competing" with my age



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group and maybe trying to improve relative to that average, though. This kind of article, however—read by someone looking to get into running or pick it up again—echoes our cultural pessimism of aging.

**Bruce Benson** / via Facebook

## Run Time

Every winter I count the days leading to nicer weather. I try to motivate myself to go out for runs in extreme cold and on icy roads, always hopeful. The March/April issue of *Running Times* showing up in my mailbox helped this year. I turned the pages hurriedly to see the spring shoes selection and the training suggestions that may take me to another level. If it were not for *Running Times*, the remaining

days of winter would have seemed gloomy and dreadful. Instead, I'm looking forward to an exciting new running season.

**Enrique Murillo** / Warwick, New York

## Splitting Sugars

Looking at "Sugar Rush" [Fast Fuel, March/April 2015], the green light section states that white sugar is a simple sugar. Not to get too technical, but that is not accurate. While fructose and glucose are simple sugars (monosaccharides), sucrose, or white sugar, is a disaccharide comprised of the other two simple sugars. Gels and bars typically do contain simple sugars for maximum absorption, but not usually sucrose.

**Joe Benvegna** / Centennial, Colorado



## FIND US ON THE WEB

Head to [runningtimes.com](http://runningtimes.com) to check out a sleek, newly designed website. There, you can find comprehensive coverage of the top runners in preps, masters, and trails, and a look at the workouts that power them to PRs. The website can also help you through your summer training. In June, follow [runningtimes.com/track](http://runningtimes.com/track) for coverage of the USA Track & Field championships.

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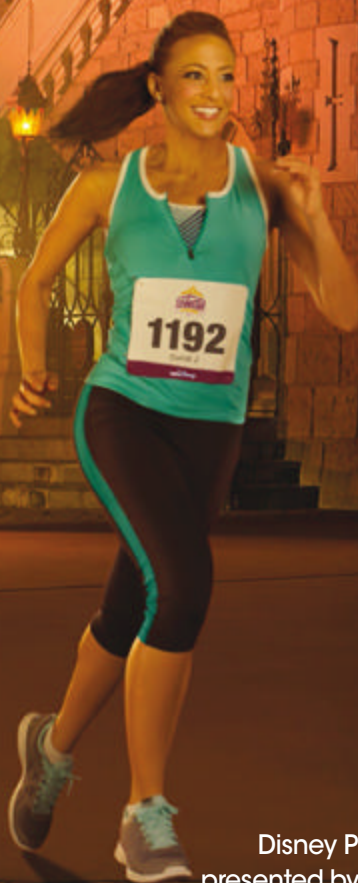
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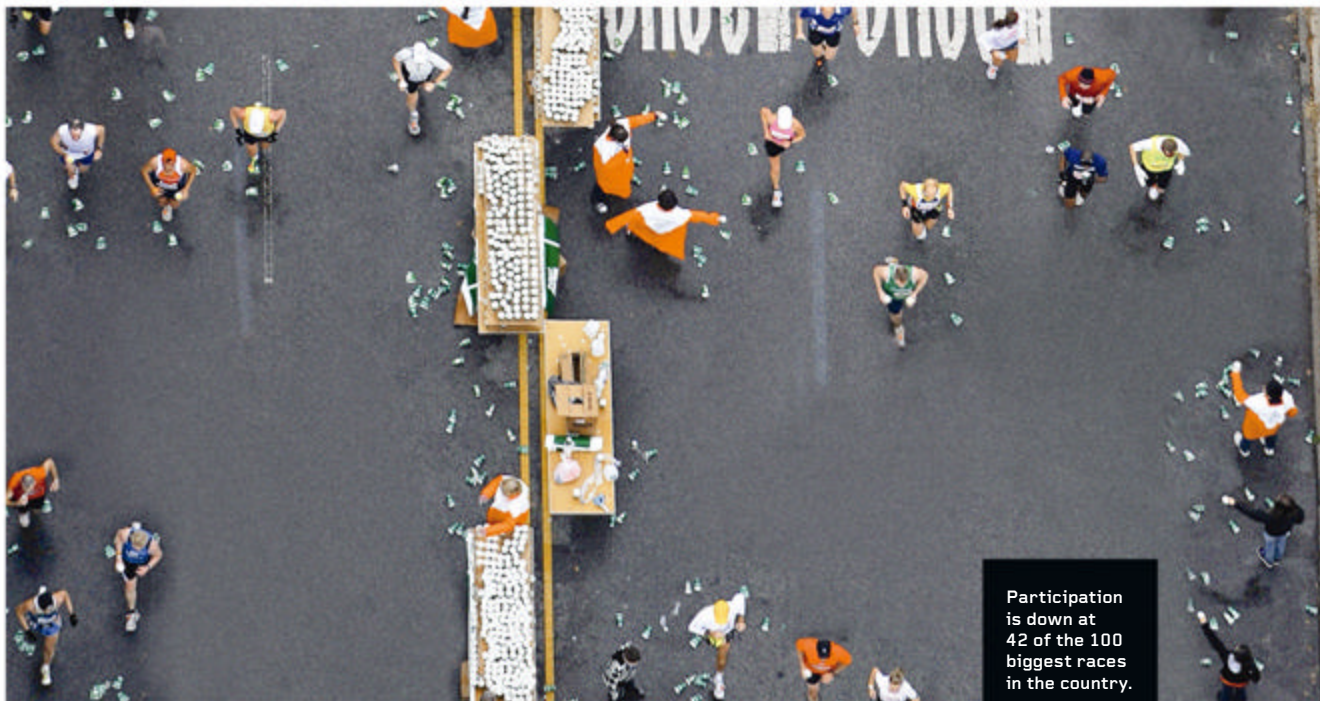
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# SHORTS



Participation is down at 42 of the 100 biggest races in the country.

## A Crowded Field

As races proliferate, supply is starting to outpace demand.

BY MATT MCCUE

THIS YEAR, CITY OFFICIALS IN DENVER HAVE DECIDED THAT TOO MANY RACES ARE TAKING place, and they have put a one-year cap on new events for 2015. The Office of Special Events cited the strain races put on streets, parks, and traffic as reasons for the decision.


Last fall, the city council in Raleigh, North Carolina, made a similar move, voting to cap at 95 the number of 2015 races that are allowed to close streets.

These two cities are among the most recent in which a surge in the number of events has forced officials to change policies. While the moves sound radical, there are already 250 races held annually in Denver. In Raleigh, the figure has spiked from 45 in 2011 to the agreed-upon 95 in 2015. How many more races can these communities, with populations of 650,000 and 430,000, respectively, support, if they aren't already saturated?

The skyrocketing growth in events mirrors what is happening nationwide. In 2009, approximately 17,000 races occurred across the country. By 2013, the most recent year for which data is available, that number had climbed to 28,200, according to Running USA, a nonprofit group that provides industry analysis to help promote long-distance races.

Meanwhile, subjects in Running USA's 2015 National Runner Survey reported finishing an average of seven races in the last 12 months. At these rates, the race supply threatens to outpace the demand. "If we're not there yet in terms of a constriction [in the number of annual races], we're close," says Rich Harshbarger, CEO of Running USA.

There were approximately 19 million race finishers in 2013, but because runners can choose from an increasing number of events, not all races are seeing an increase. Running USA reports that 42 of the 100 largest races in the country lost participants.

"No question, many markets in the U.S. are becoming oversaturated with events," says Dan Cruz, spokesman for the Competitor Group, host of the popular Rock 'n' Roll series. Cruz cites greater Phoenix, where eight marathons are held, and Southern California, as two locales crowded with events. "There is a half marathon pretty much every weekend from San Diego to Santa Barbara," Cruz says. For future growth, the Rock 'n' Roll series is focusing on expanding internationally. It's also adding 5Ks to its existing U.S. events the Saturday 

before its full and half marathons on Sundays—and challenging racers to compete both days.

Even the 4.78-mile Manchester Road Race in Connecticut, one of the country's first turkey trots, now contends with about 30 events of comparable length scheduled for Thanksgiving weekend in the state. James Balcome, Manchester's race director, says that's because his race has been successful. "The feedback is that some people get frustrated because they are in a 15,000-person race, and they can't race the way they want," he says. "I think three or four races have started around us because of that."

## Competing for Entrants

The primary barrier to launching a race is securing an event permit. Because most cities collect event fees, it has been in their best interests to green-light races.

In the last year, however, communities have begun to rethink their approach. Grace Martinez, the community affairs liaison at the Denver Office of Special Events, acknowledges that, in her words, the 250 annual races "snuck up on us." That averages out to five races a weekend, with most happening between May and October, leading to traffic jams and complaints from residents.

This year, the Office of Special Events will try to determine how many races the city can comfortably sustain. "We still get calls from people almost every day asking to put on a new race," Ramirez says. "We have to say no to them because we can't absorb that."

Alan Lind, the co-director of Denver's Platte River Half Marathon, decided to stop holding his 7-year-old Park to Park 10-miler in 2013. The former Labor Day weekend race topped out at about 1,100 finishers before dipping to 818 when Lind called it quits.

"Races keep drawing from the same group of people," he says of the runner market in Colorado. At least 10 races are scheduled for Labor Day weekend in greater Denver,



▲ **Municipalities, weary of street closings, limit permits.**

including five half marathons.

Race directors also note that the pool of willing volunteers has not kept up with the number of races, which means organizers have to scramble to find groups to man water stations, direct runners, and hand out refreshments.

## A Growing Expense

When the cost of a 5K exceeds the expense of dinner and a movie, many runners start thinking twice about signing up. According to Running USA's 2015 National Runner Survey, runners spend an average of \$25 to \$30 for a 5K, \$35 for a 10K, \$70 to \$80 for a half marathon, and \$150 for a marathon. For a runner averaging a race every other month, that could easily add up to \$400 or more per year. "I definitely have made adjustments because of the high cost of racing," says R.L. Bynum, a runner from North Carolina who competed in seven marathons in 2014. "I rarely run any races shorter than a marathon, because I refuse to pay \$30 or more for a shorter race, particularly a 5K."

The races that are thriving in this crowded marketplace? The ones that provide an unmatched adventure, like the New York City Marathon, the Disney World races or, say, the Boots and Daisy Dukes 5K in Harshbarger's hometown of Wichita, Kansas.

As market forces work, event organizers hope races will improve everywhere. Racers will put their money where the quality is—and the marginal events will get left behind. **RT**



## EAT LIKE AN ELITE

### Cory McGee

In 2013, as a University of Florida junior, Cory McGee ran her 1500m PR of 4:06.67 and made the U.S. team for worlds. Now living in Boston, McGee, from Mississippi, brings her Southern cooking north.



#### Breakfast

I have two pieces of toast. I get this pecan cranberry bread that has a lot of texture. And I always search out jam. Apricot is high up on my list. I do that with a banana and coffee 90 minutes before my workout.

#### Post-Track

Immediately after I work out, I always have a protein shake with 20 grams of protein, along with some fruit. I usually bring a Tupperware of sliced oranges or strawberries.

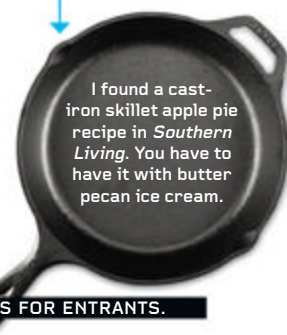


#### Main Meal

I don't eat lunch; I eat breakfast all day. I have a cast-iron skillet I use for everything. Two or three eggs and a lot of vegetables, onion, bell pepper, and celery, which in the South is called the holy trinity of cooking. My favorite thing is Tony Chachere's. It's a spicy creole seasoning, good on chicken or eggs or pasta.

#### Dinner

I grew up with three sisters, and we share recipes. I like to make shrimp and grits or pecan-crusted chicken. Or I'll make couscous and a squash and Moroccan spiced chicken with apricots and raisins. Two different spectrums: really healthy or really Southern.



Left: Shutterstock; McGee: Tim Casey / UAA Communications

**SPLITS** THE NEW USA HALF MARATHON INVITATIONAL, TO BE HELD NOV. 21 IN SAN DIEGO, REQUIRES QUALIFYING TIMES FOR ENTRANTS.



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1



2



4



3



5

## CamelBak

### 1/ CIRCUIT \$85

► The mesh panel between your back and the easy-to-fill reservoir keeps you cool—especially if you fill it with ice.

## Salomon

### 2/ S-LAB SENSE SET \$120

► Light and breathable; soft enough to wear next to skin. Carries two small (17-ounce), collapsible pouches in front pockets.

## Osprey

### 3/ REV 1.5 \$70

► Compact design hugs the upper body and shoulders, keeping the weight stable, balanced, and easy to carry.

## Ultimate Direction

### 4/ JENNY COLLECTION ULTRA VESTA \$125

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## Source

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# Better with Friends

Katie Mackey feels stronger on a team of Beasts.

BY ERIN STROUT

AS THEY JOGGED 15 MINUTES UP a dirt road in Sedona, Arizona, Katie Mackey and her Brooks Beasts teammates chatted about how their track workout at the local high school might unfold at 4,500 feet above sea level.

The Seattle-based middle-distance group of 14 athletes, including Angela Bizzarri and Nick Symmonds, spent much of March and April sharing a house in nearby Flagstaff, where they hoped altitude camp would translate into a season of personal bests and tickets to the world championships.

"It's really fun to come up here and do these camps with the team, because we all run together, but then we also come home and have a lot of fun just hanging out," Mackey says.

The camaraderie has been pivotal in her development, she says. When she and her husband, Danny Mackey, head coach of the Beasts, decided to move to Seattle to help launch

the new professional group in 2013, they weren't exactly sure how the scenario would pan out—but they knew that their personal and professional relationship was working.

Living in Boston in 2012, the Mackeys found themselves newly married and without a coach for Katie. In an Olympic year, they didn't have much time to figure out an alternative, so Danny took the reins.

"We were really nervous about it, but that season was my best so far. I PRed in every event," Katie says. "Obviously I'm biased, but Danny is really good at coaching."

When the chance to join a group arose, they were fairly certain it would only enhance what they were already doing.

"It's easier when there's a team around. When I'm at practice, I'm one of the athletes and I can just be at work," Katie says. "At home, I'm not an athlete anymore."

## ESSENTIAL WORKOUT



**Who**  
Katie Mackey, 27

**What**  
A mix of tempo and hill intervals

**Why**  
The muscular stress from the hills and the metabolic stress from the tempo work results in 28 or so minutes of work, but in four segments.

**When**  
During base-training segments

**The Details**  
 ▶ 4 x 70-second hills at 5K effort  
 ▶ 3 minutes jog recovery  
 ▶ 2 miles at "true tempo" (8 out of 10 effort) on the track or a gravel path  
 ▶ 3 minutes jog recovery  
 ▶ 4 x 45-second hills at mile race effort  
 ▶ 3 minutes jog recovery  
 ▶ 2 miles "true tempo"

**It changes rhythm and terrain to simulate racing, and breaking it down into segments makes it easier to bite off and chew.**

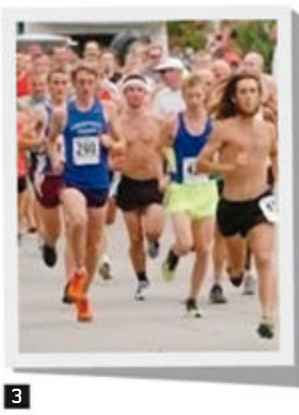
Putting in 70–80 miles weekly, she trains using Danny's philosophy of touching all metabolic systems. In an average base-training week, Katie will do two days of easy recovery runs (split into doubles), two days of speedwork on the track or on hills, a long run of 90 minutes to 2 hours (with pickups in the last half), a moderate day, and one cross-training session—running in the pool or using the ElliptiGO.

This season the goal is to snag a spot on the U.S. team heading to Beijing, China, for the world championships in the 1500m (her PR is 4:04.60) or 5,000m (15:04.74). If she makes the team, it won't be her first appearance at a "world championship" event—she competed in the Flotrack Beer Mile last December, where she finished seventh in 6:55. This light-hearted approach helps Katie stay on top of her game, with her team to keep her balanced.

"They are relaxed and goofy. It's good for me because I have a tendency to be really tightly wound," she says. "That's not when you run well—the tighter you grip it in your hand, the more likely it will spiral out of your control." **RT**

**+** IN MAY, MACKEY WAS ONE OF NINE U.S. WOMEN TO HAVE RUN SUB-15:20, THE WORLD CHAMPIONSHIPS "A" STANDARD IN THE 5,000m.





## Long, Strange Trip

What's a surefire way to nail a PR this summer?  
Pick an unusual distance for a race.

### 1 / TABLE ROCK 27K July 18, Stinson Beach, California

► If you're trying to calculate how far 27K is, you're missing the point. (It's roughly 16.7 miles.) The trail route climbs 2,000 feet in the first 2 miles, with views of the Pacific from the top. The 27K does a figure 8 through Mount Tamalpais State Park, while a 10K starts 30 minutes later for those who want the same views with less distance—

and round numbers. [insidetrial.com/calendar/la-sportiva-table-rock-trail-run/](http://insidetrial.com/calendar/la-sportiva-table-rock-trail-run/)

### 2 / DALLAS 7/4 July 4, Dallas

► Dallas maximizes the July 4 theme with two races, a 7K and a 4K, which begin at 7:40 a.m. The courses are *exactly* those distances, with USA Track & Field certification to prove it. Finishers get a free ticket for admission into the State Fair of Texas Midway. [dallas74.com](http://dallas74.com)

### 3 / KELLEY ROAD RACE Aug. 1, New London, Connecticut

► This New England tradition since 1963 changed distances several times, due to road construction, until it arrived at the current 11.6 miles. The course, which starts and ends along Long Island Sound, has a few rolling hills and one bigger incline at mile 8. Here's another rarity: It's free. Runners are asked to bring non-perishable donations for the local food bank. [kelleyroadrace.com](http://kelleyroadrace.com)



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## PERSONAL RECORD

By Rachel Toor



# A Filled Niche

DIVIDED THOUGHTS ON THE POPULARITY OF ULTRAS.

**I**T'S EASIER TO GET INTO THE WESTERN STATES ENDURANCE RUN THAN IT IS TO get into Harvard. But not by much.

This year the admit rate to Harvard was 5 percent. Of those who applied to run Western States, only 9 percent were let in. For both opportunities, you have to prove yourself before you can even enter the lottery. For Harvard, that means acing the SATs, being valedictorian, climbing Everest solo without oxygen while juggling rabbits, and finding the secret to cold fusion. For Western States, you have to run one of the approved qualifying races. Then, with odds against you, you cross your fingers, pour libations to the gods, and hope to win a race bib.

Harvard is the oldest American university; Western States was the first 100-mile trail race. But primacy only goes so far toward excellence. Both institutions have innovated, originated, and maintained many traditions that make them superior to others, though Western States has a more democratic rather than meritocratic spirit. While, as with Harvard, there are some applicants who are more equal than others, the race organizers try to give an advantage to those who have previously applied and not gained entry. It's one of the many things that makes what seems like an elite institution really more of a people's race.

No wonder so many people want in.

For a long time, Western States was a niche within a niche, an event that seemed nutty even to hardcore road runners. Ultras were for those who had aged out of fast marathons;

for the big and sturdy, not the reedy and fleet. You had to be kind of crazy to want to do an event like Western States. For many of us, making the trek from Squaw Valley to Auburn, California, even if you weren't racing—if you were just hanging out at the aid stations along the course, waiting for your runner to come by so you could pace the last 20 or 40 miles—you found yourself surrounded by a cadre of fellow lunatics, and, well, it felt like living in a small town. A very small town.

It's been a few years since road races began selling out in a matter of minutes, but now ultras are filling up like buckets in a hurricane. If you don't register early and plan ahead (I don't), you will not get in.

I am torn by two competing impulses. I want trail and ultra running readily available to all. I want to encourage newbies to enter races, and then to push themselves harder than they ever thought possible. I want folks to get off the couch, step away from the screens, and enjoy the natural world.

And I want to enter a race an hour before it starts, having decided the night before to do it. The thing is, I don't like to plan ahead. Maybe it's because I never know what's going to happen to my schedule; more likely it's some deep-seated fear of commitment. But not planning ahead is no longer an option.

It seems unbelievable to me now that there are ultrarunners who are known by people who don't run, that at races you can hear murmuring sightings of "celebrities." Surely some of the credit for the ultra explosion—and I do feel credit is the right word—belongs to Christopher McDougall, whose excellent book, *Born to Run*, allowed masses of readers to learn about our crazy subculture in a way that was as entertaining as it was enlightening.

This niche has been filled. **RT**



Rachel Toor's newest book is *On the Road to Find Out*, a novel about a teenage girl who decides to start running.



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# FOOTSTEPS

By Roger Robinson



▶ New Zealand's 1500m gold standard:

1 / John Walker takes the 1976 Olympic title.

2 / Peter Snell wins at the 1964 Games.

3 / Jack Lovelock sets a world record (3:47.8) in 1936.

## Vikings of the Pacific

NICK WILLIS RUNS IN THE WAKE OF NEW ZEALAND'S LEGENDS.

**W**HEN NICK WILLIS WAS A BOY IN LOWER HUTT, NEW ZEALAND, HE USED TO WATCH videos of Kiwis Jack Lovelock, Peter Snell, and John Walker winning Olympic 1500m gold medals. In 2008, in the footsteps of those heroes, Willis took the silver medal.

In the history of the fiercely contested Olympic 1500m, New Zealand's résumé is extraordinary—three gold, one silver, two bronze. The list is testimony to the rare mix of long-term work and astute inventiveness that typifies that feisty, faraway little country.

In 1936, the light-stepping Lovelock unveiled a new tactic—a long kick from 300m out—for a world-record Olympic victory that he justly called “an artistic creation.” By contrast, Snell in 1964 astounded the world with his sheer power, and when John Davies held third, it confirmed the endurance strength they acquired from Arthur Lydiard's training.

Rod Dixon's zest, plus years of South Island hill running, gave him an unexpected bronze in 1972. Walker, first man to run a mile faster than 3:50, returned to Lovelock's tactic in 1976, surging from 300m, holding off a straining pack that included speedsters Eamonn Coghlan (Ireland) and Rick Wohlhuter (USA).

When Willis revived the tradition, it was in an even closer mass finish, 0.61 seconds covering second to sixth.

At every running distance from 800m up, New Zealand has historically punched above its weight. The population of 4.4 million, about half New York City's, ranks 123rd in the world, between Costa Rica and Liberia. Snell won two Olympic 800m golds (1960, 1964) and Marise Chamberlain blazed the women's trail with 800m bronze in 1964. At 5,000m, Murray Halberg sprang a surprise attack three laps from home to win a thriller

in 1960. Dick Quax nearly matched that in 1976, finally edged by Lasse Viren, with Dixon desperately close in fourth.

New Zealand's marathon tradition is a story in itself. Three have won Olympic bronze—Barry Magee (1960), Mike Ryan (1968), and Lorraine Moller (1992). Three have won Boston—Dave McKenzie (1967), Allison Roe (1981), and Moller (1984).

“McKenzie was a big inspiration for me at age 16,” Dixon said this year.

Roe and Dixon are famous for their New York victories (1981, 1983). Four Kiwis won Fukuoka from 1960 on, when it was effectively the world marathon championship (Magee, Jeff Julian, Ryan, Paul Ballinger). Millie Sampson held the women's world record back in 1964.

Like Vikings, they cross the Pacific to plunder race awards. The men won the world cross country title in 1975, with the women's team narrowly held out by the U.S. (44–50). The first years of big-time American road running in the 1980s were dominated by Dixon, Anne Audain, and the briefly brilliant Anne Hannam. Kim Smith revived that tradition, while Jonathan Wyatt, Melissa Moon, and Kate McIlroy conquered the world in mountain running.

Then there are the masters. Jack Foster, John Campbell, Derek Turnbull, and Bernadine Portenski are legendary. Even Willis is getting faster at 32.

It might be something in the water. **RT**

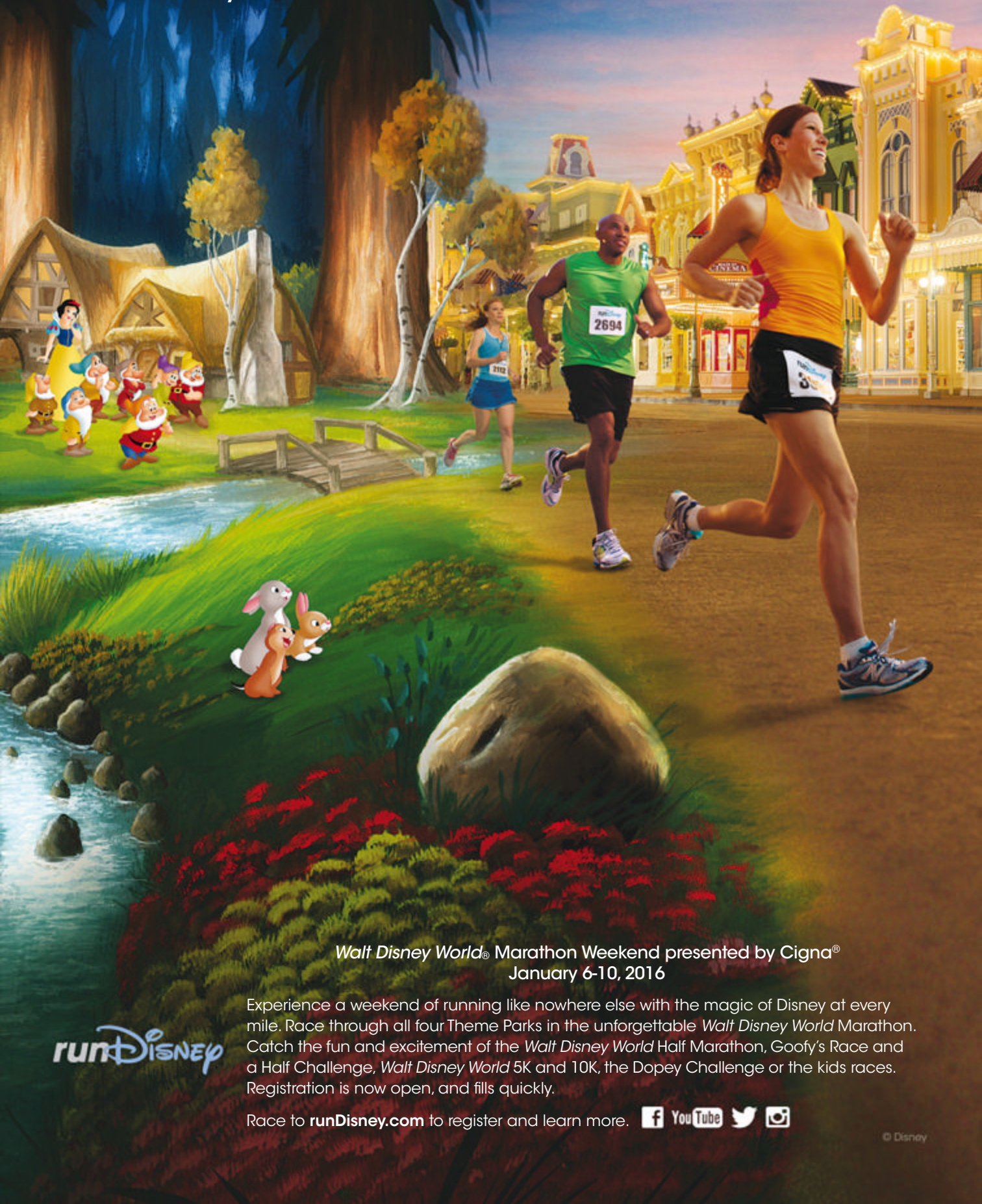


Footsteps columnist Roger Robinson (New Zealand) set masters records at the 1984 Boston and 1989 New York City marathons.

Left (top): Ed Lacey/Popperfoto/Getty Images; Left (bottom): Neil Leifer/Sports Illustrated/Getty Images; Right (top): AP Photo; Bottom: Courtesy Tim Chamberlain



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## Remembering Helsinki '83

NATIONAL PRIDE WITHOUT THE POLITICS.

**P**ERHAPS BECAUSE IT IS THE MOST EXPANSIVE AND INCLUSIVE OF ALL SPORTING events, the Olympic Games has also been the sporting institution most touched by another of man's basic instincts: politics. In 2015, as the track and field world gathers in Beijing for the IAAF World Championships in Athletics, we recall that the first world championships in August 1983 in Helsinki, Finland, was as much a response to the political environment of its day as it was a pure athletics contest.

In the 15 years before Helsinki, the Olympics had seen its founding ecumenical purpose twisted by the wrenching struggles of a changing world order. The political overtones began with student protests and the "Night of Sorrow" killings preceding Mexico City 1968 and continued through the Munich Massacre of 1972, the 25-nation African boycott of Montreal 1976, the USA-led boycott of Moscow 1980, and the Soviet boycott of Los Angeles 1984. With a stage that big and a spotlight that bright, the Olympic movement seemed incapable of masking the intrusion of man's inherent incivility.

Helsinki 1983 was to be the answer for the athletics community. Removed from its attachment to other sports, track and field athletes arrived in Helsinki in full force. With 158 of the 170 IAAF member federations on hand, the inaugural world championships was the largest meeting of countries in a sporting event to that date. Though Finland was a democracy, it wasn't a member of NATO, and it shared a border with the Soviet Union, making it a perfectly, though delicately balanced stage for all.

And though there was plenty of national rooting, only the press seemed interested in the medal count. For most in attendance—including me, writing for the *Boston Herald* and broadcasting my "Runner's Digest" radio show—a familial sense of belonging suffused those 10 days in August. Fans cheered athletic excellence regardless of the flags or the insignia the athletes wore.

Sure, we Americans wanted Henry Marsh to win the steeplechase, and when he took a hard spill over the final barrier, it was a downer. But even Americans showed an

appreciation for how West Germany's Patriz Ilg had forced the issue, which led to the fall.

Everyone wanted the Finns to win at least one gold medal, not only to honor the nation's great history in athletics, but to hear their national anthem ring out. So when Finland's Tiina Lillak threw the javelin 70.82 meters on her last attempt to win the competition, she lit up the 1952 Olympic stadium brighter than any other single performer.

There was a group of South African fans sitting behind us whose athletes weren't allowed to compete, due to their government's apartheid policies. But the group was made up of diehard track fans who knew and cheered runners from around the world—and constantly fed us facts on how their athletes would have done. Some 55 South African athletes had met the world championship qualifying standards, which would have made them the third-largest team in Helsinki behind the United States and the USSR, had they competed.

True, certain results were viewed through the prism of nationalism, but it felt as if the friendly rivalry between teams rather than the bitter animosity of political enemies. Whether it was Mary Slaney's sensational wins in the 1500m and 3,000m over her arch Soviet rivals or Carl Lewis anchoring the U.S. men's 4x100m team to a new world record, when you walked around people would come up and say, "Congratulations. You Yanks had a great day out there today." And you'd be taken back a little, though it somehow left you feeling better as you walked away.

Coming home, our plane was full of not only returning athletes and fans but a whole shipment of young Finns heading stateside as part of an educational exchange program. When the plane touched down, they all cheered and clapped for being in the USA.

Sometimes we forget. **RT**



One of the most respected names in running journalism for more than 30 years, Toni Reavis blogs regularly at [tonireavis.com](http://tonireavis.com).



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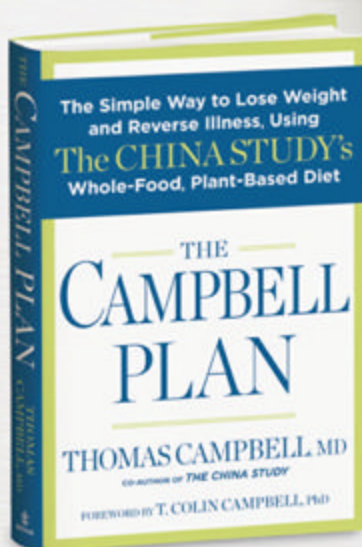


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## COACHING FROM AFAR

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IT REQUIRES RESEARCH BUT CAN  
REAP REWARDS.

*By Philip Latter*

TWELVE MILES INTO THE 2014 CHICAGO MARATHON, NOTHING WAS going right for Loring Crowley. Her hair and eyes were sticky with Gatorade after a botched aid station stop and, more troubling, her legs felt leaden. The main culprit was nervous energy at the start. It made the 31-year-old go out hard at the gun, instead of trusting the game plan.

Relax, she thought. Remember what Coach said about rough patches passing and having confidence in the training.

Over the next few miles Crowley, a project engineer, put her faith in a man she'd never met and a training plan that arrived each week via an online calendar. A mile later her legs felt great. Crowley ended up with a 2-and-a-half-minute personal best of 2:41:39, which was fast enough to qualify her for the Olympic Marathon Trials.

"It was pretty fantastic," Crowley says. "I felt the best I've ever felt during a marathon by far."

Crowley's experience reflects a wave that is overtaking the running industry: athletes turning to online coaches. Though exact numbers are hard to come by, online coaching services have boomed over the past five years, creating a cottage industry for established names and local coaches alike. But with so many options, how can you find an online coach who's qualified and right for you?

## WHY GO ONLINE

Running may be the simplest of sports, but designing and implementing proper training can be complex. Books and magazines offer a good knowledge base but come up short when tailoring plans to your individual needs—and they don't offer the moral support and encouragement that a human does. Ideally, we would all have a knowledgeable local coach to meet with on a weekly basis, but such individuals are often hard to find and may not have the credentials you're looking for.

For many, the solution to these problems has been to hire somebody online.

Take the case of Amy Gordon. The former Army lawyer began running at age 30 to combat the stress of law school, but working from a mishmash of training books, magazines, and friendly advice, she nearly killed herself in her first marathon. "I quickly realized that I had absolutely no idea what I was doing," she says. "Plus, with my work schedule and the chance of deployment, I knew that I wouldn't be able to make it to a lot of group training runs, so I decided to find an online coach."

Gordon's search led her to the Run SMART Project. It offered many of the aspects she desired in an online coaching service: daily running schedules, one-on-one interaction (via email or phone), an acceptable price point, the chance to work with a credible coach from an established program, and a sounding board for concerns.

Working with her coach, Gordon made it a goal to break 3:10. On race day she was nervous, but her coach calmed her with a simple reminder that one race doesn't validate a runner.

Gordon ran a 3:08 that day and has since run 3:07 at the New York City Marathon.



**"I TEND TO GET REALLY STRESSED OUT BEFORE MY BIG RACES, AND [MY COACH] ALWAYS MANAGES TO CALM ME DOWN AND GIVE ME SOME PERSPECTIVE."**

—AMY GORDON

## THE PRICE OF EXPERIENCE AND INTERACTION

What coach will be looking at your training, and how often, depends on how much you're willing to spend. At the lowest end of the pricing spectrum are computer-based programs like runcoach. Founded by Tom McGlynn, former Nike Farm Team runner, runcoach relies on a series of algorithms to help formulate your training based on data you input and update. It has served more than 100,000 runners to date, and with human interaction limited to customer service, the cost is less than \$20 per month.

"We won't ever be as good as a local coach that's going to watch you and design a plan," McGlynn says. "We admit that. What we are trying to do is provide a little bit of personalization. I feel it's a magnitude better than trying to cobble a plan together out of the back of a book."

But sometimes runners want that interaction. "They want someone to look at their training log. They want someone providing feedback," says Luke Humphrey, Hansons Coaching Services founder.

Working with a coach increases the level of personalization

and interaction but also the cost. To lower the barriers to access, some coaching services now offer tiered plans. At the low end you get a training schedule and a monthly email. Pay top dollar and you'll receive form analysis, nutritional strategies, and on-the-fly adjustments to your schedule, along with unlimited access to your coach via phone. Prices vary from \$25 per month to \$350 per month.

"If you haven't had a coach before, I'd recommend something sort of middle-of-the-road," Humphrey says, pointing to the Hansons' \$75 per month intermediate package that is close to the industry average price. "Start off smaller, and if you want more then build from there."

Smaller coaching services have also flourished, often by maximizing customization and individual attention. Caleb Masland, a 2:30 marathoner and full-time online coach in Boone, North Carolina, began coaching friends and family members five years ago after successfully reviving his own running career following knee surgery. Today he boasts a waiting list, thanks to the made-from-scratch schedules he provides his runners and the success of Team Wicked Bonkproof, an online community he created for his clients scattered across the country.

"When I started building up the coaching business, one of the first things I did was to create a Facebook group," Masland says. "I encouraged people to do the same races so we'd have more of a sense of community."

Technology has also reshaped what an online coach can offer. GPS watches and training log websites allow coaches easy access to their athletes' performances daily. "It helps create a very interactive experience with my runners," Masland says. "It allows them to tell me what they think is working and what's not."





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## GETTING YOUR MONEY'S WORTH

When Crowley decided to make a concentrated push for the Olympic Marathon Trials, she searched for an online coach with proven methodology. The success of the Hansons' program, highlighted by Olympic runners Desiree Linden and Brian Sell, told her she was on the right path.

"I was really close to a goal, and I wanted the training to be very specific to that goal and [to] know what the steps are," Crowley says. "Their program had a lot of structure and a lot of concrete goals."

Whether you're interested in a big name or small startup, make sure to do a thorough vetting before handing over any money. Question coaches on their experience, education, and training philosophies to make

sure you're a good fit for their system, and don't be afraid to ask for testimonials from athletes they've coached. Also see if they've been certified through USA Track & Field or the Road Runners Club of America. Both organizations provide multi-day coaching curriculums that ensure their graduates know the basics of exercise physiology, training theory, and sports nutrition.

Those qualifications alone don't guarantee you'll find online coaching bliss, but those who find success have a hard time imagining life without their Internet mentor.

"I didn't run in high school or college, and although I've read a lot of books about running and read running magazines and all that, I still really don't know what I'm doing," Gordon says. "So in my mind, I have a coach for a reason, and it only makes sense to follow his training schedules." **RT**

**"I WAS REALLY CLOSE TO A GOAL, AND I WANTED THE TRAINING TO BE VERY SPECIFIC TO THAT GOAL AND TO KNOW WHAT THE STEPS ARE."**

—LORING CROWLEY



## MAINTENANCE PLAN

## Roll It Right

BY CARL LEIVERS

Despite the foam roller's popularity, Richard Hansen, a Boulder, Colorado-based sports chiropractor, says it "shouldn't be considered the silver bullet for at-home therapy." Hansen, who treats recreational runners as well as Olympians, warns that incorrect use may cause muscle damage.

**Follow these guidelines to use the foam roller safely and effectively:**



### ROLL FOR RECOVERY, NOT TO TREAT INJURIES

> Rolling an injured area can aggravate damaged muscle tissue, particularly in the first few days after the injury. The foam roller is more effective at assisting recovery. It stimulates blood flow, breaks up scar tissue, and helps increase the muscle's range of motion.



### KEEP IT LIGHT

> Aggressive foam roller use may feel good, but it can override your pain sensation. When that happens, it's possible to use too much pressure or work too long on a particular muscle. "Just because it hurts doesn't mean it's more effective," Hansen says. "It's better to underwork tissue than overwork it." Make sure to avoid bony areas and places where tendons attach. If you're dealing with IT band syndrome, focus on the middle, not the insertion points of the knee and hip tendons.



### TIME IT

> Hansen recommends using the foam roller after your workout, rather than before. Begin by lightly foam rolling an area for 30 seconds, then gently stretch the area for 10 seconds. You can repeat that cycle up to three times on each body area. Hansen says that the foam roller should be just one piece of your recovery process, not your only "go-to" technique.





## ENDURANCE ATHLETES USE CONTROVERSIAL METHOD TO BOOST PERFORMANCE

# IS IT LEGAL?

Ask endurance athletes about the three most controversial letters in sport and they will tell you: EPO. However, thanks to recent advances in sports nutrition, the discord surrounding EPO is now over. A company has produced a legal solution to the EPO problem.

EPO stands for Erythropoietin, a hormone that gives blood a greater capacity for carrying oxygen. Doctors first used EPO to counter red blood cell loss that resulted from chemotherapy treatment in cancer patients.

When synthetic EPO became available several decades ago, endurance athletes, especially cyclists, started using EPO to gain an advantage during training and races. The reason was simple: with more oxygen being delivered to muscles, performance and endurance improved dramatically.

In the mid-1980s, almost all of the governing bodies in sports banned EPO.

Unfortunately, endurance athletes in several sports worked to get around these restrictions by using other blood doping techniques to mask EPO use.

The use of synthetic EPO has been extremely controversial. Several star endurance athletes have admitted using synthetic EPO and have faced severe consequences. The subject of EPO use has also gained significant media attention in the last 10 years.

Fortunately, there's a new legal way for cyclists and other endurance athletes to benefit from boosting EPO production. A company called Biomedical Research Laboratories has developed a natural EPO stimulator specifically for athletes seeking to gain an edge.

The product is called EPO-BOOST®. Taken daily, the ingredients in EPO-BOOST® help the body naturally boost circulating EPO levels. With a boost in EPO levels, more oxygen can

reach working muscles resulting in dramatic improvements in athletic performance.

The science behind EPO-BOOST® is equally compelling. Dr. M.T. Whitehead from the Department of Health and Human Performance at Northwestern State University conducted a 28-day double-blind placebo-controlled clinical trial to test the effectiveness of the key ingredient EPO-BOOST®.

The research showed that the active ingredient in EPO-BOOST® increased EPO production by over 90% compared to the group taking the placebo. The supplement group showed significant improvements in athletic performance as measured by VO2max and running economy.

EPO-BOOST® is not a miracle pill and it won't make you a world champion overnight. In fact, most users will see that it takes 3-4 weeks to obtain the full performance benefits of EPO-BOOST®. Athletes who use EPO-BOOST® are sharing their results.

Adriana Nelson Pirtea, World Half-Marathon Champion, used EPO-BOOST® in her preparation for the 2014 season. Adriana stated, "I have been using TriFuel and EPO-BOOST for the past two years and I feel a huge difference in my training and races. I start out being more focused and alert during my training. For me, it is important that everything I put in my body is simple, clean and effective. I've tried other products before, and most of them gave me discomfort during training. BRL Sports supplements are simple the best."

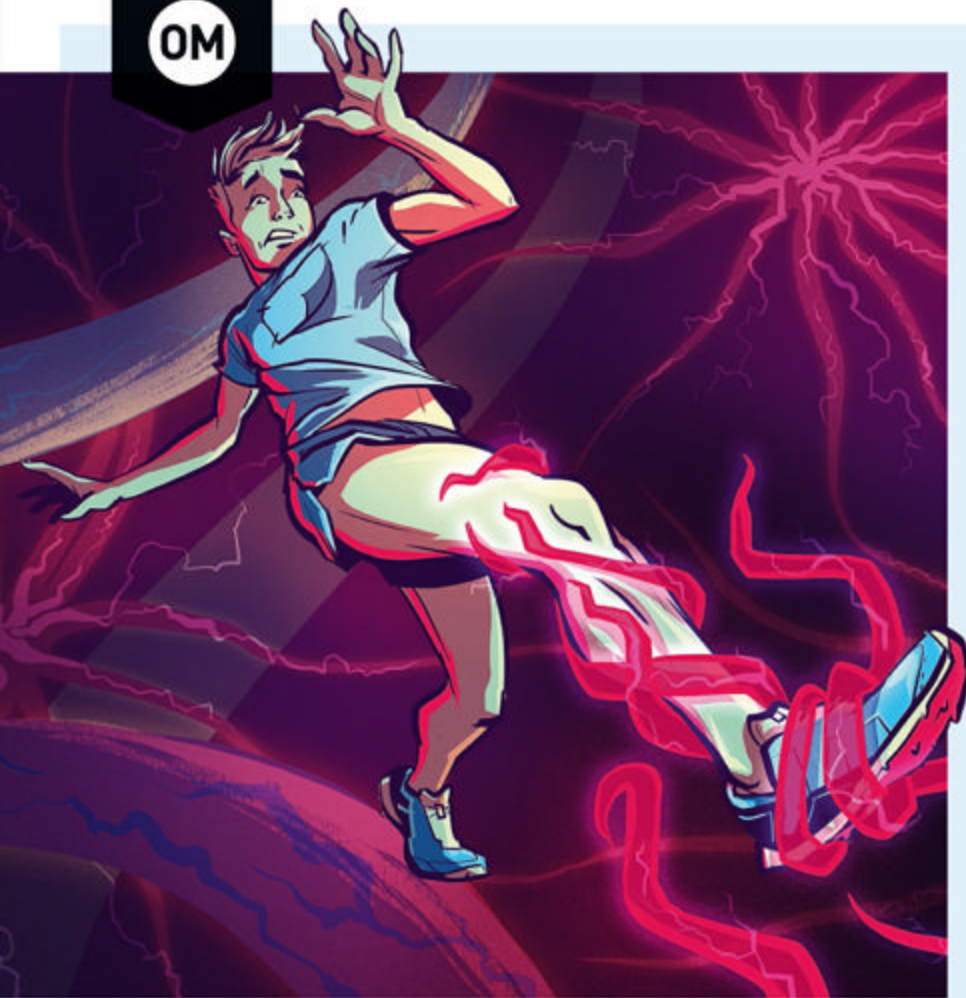
Nuta Olaru, who took 1st in the Big Sur International Marathon in 2013 and finished 3rd in the Boston Marathon, used EPO-BOOST® in her preparation for the season. Nuta stated, "I was introduced to EPO-BOOST a few months ago and I am extremely pleased with the results so far. I feel like TriFuel and EPO-BOOST had a great impact on my recovery and kept me focused during the races as well as in between the races. Thank you for making such great and clean supplements."

So EPO-BOOST® provides a total solution for athletes in all sports looking for improved energy, endurance, and recovery. EPO-BOOST® is legal for competition. All ingredients in EPO-BOOST® are in compliance with WADA, UCI, IOC, and NCAA rules. Each batch of EPO-BOOST® is certified to be free of banned substances by the Banned Substances Control Group (BSCG) in Los Angeles.

Biomedical Research Laboratories offers a strong guarantee to back the product. Athletes can use EPO-BOOST® for a full 90 days. If the athlete is not fully satisfied in those 90 days, the athlete receives a prompt refund.

A company spokesman confirmed a special offer. If you order this month, you'll receive Free Enrollment into the company's "Elite Athlete Club" where you'll qualify to receive a full 25% discount on all bottles of EPO-BOOST®. And so you always have EPO-BOOST® in your system to increase your endurance, you'll automatically receive a fresh bottle every 30 days. There are no minimum amounts of bottles to buy and you can cancel at any time. You can order EPO-BOOST® today at [www.EPOBOOST.com](http://www.EPOBOOST.com) or by calling 1-800-780-4331.





# YOU'VE GOT NERVE

THERAPIES ROOTED IN NEUROSCIENCE AIM TO PROMOTE INJURY HEALING. *By Heather R. Johnson*



Most runners have been there. The race goes well, but the knee starts screaming shortly after the finish. You try stretching, strengthening, and endless foam rolling. Nothing works. ¶ When traditional paths to better health fail, some athletes are finding solutions to vexing injuries by trying neuromuscular therapies. These routines are thought to improve coordination, power, and reaction time by training the body and the mind to work better together—activating muscles that the brain is failing to reach. ¶ “It addresses muscles you have issues utilizing and bridges those gaps in your ability,” says Charles Lantz, a personal trainer and muscle activation technique (MAT) specialist in San Francisco. Specialists are certified through a MAT program developed by Greg Roskopf, a former strength and conditioning coach at Fresno State University and a personal trainer. For example, kinks in a nervous system can lead to glute

muscles and hip flexors that don’t fire, which can result in that sore knee. It’s not the knee that’s the problem—it’s that the brain isn’t telling the glutes and hip flexors to work.

“An injury registers in your movement patterns,” says Eric Cobb, a chiropractor based in Tempe, Arizona. “It often creates compensations elsewhere in the body that can change your normal gait patterns. Those new patterns can become chronic and lead to structural and long-term issues.”

The nervous system continually monitors our external (temperature and noise) and internal (heart rate, balance, blood pressure) environments and hits the brakes if it perceives threat. But the nervous system can misfire and break too soon when compromised by injury, poor posture, or even vision problems.

“Your brain creates pain,” Cobb says. He has developed a system of drills, through his company Z-Health, to help athletes improve their movement patterns. These drills include mobility exercises and stretches, which are specific to an individual’s weaknesses and imbalances, to help open neural pathways.

Muscular activation techniques work with the central nervous system. Anecdotal evidence shows that they reactivate muscles and improve joint stability. Those who practice these techniques say that where there is muscle tightness, muscle weakness exists elsewhere in the body.

“Because of trauma, overuse, or stress, the muscles don’t contract,” says Laura Miles, co-owner of Norcal Muscle Clinic in San Rafael, California.

After testing, athletes are sometimes given isometric exercises to maintain the restored neural connections. To perform them, the athlete puts resistance on the knee, the ankle, or another pertinent body part while it’s positioned at a specific angle. For example, a runner trying to strengthen the ankle would turn the ankle in or out against resistance for five seconds at a time and repeat up to 10 times. For



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▶ shoulder rotation, an athlete might stand in front of a doorframe with feet hip-width apart and elbow bent, pushing the doorframe sideways with the forearm and holding for 10 seconds.

Kathy Johnson of San Anselmo, California, tried MAT when an Achilles injury threatened to derail her Boston and Big Sur marathon plans. Derek Colderbank, her therapist at Norcal Muscle, thinks Johnson's injury actually stemmed from her shoulder, where he says limited range of motion led to lateral instability in the hip, which caused muscles to pull on the Achilles.

To get to the root of an injury, a practitioner will test strength down the entire kinetic chain, asking the athlete to contract various muscles and hold for a period of time. When a weakness is identified, the trainer prescribes exercises to activate and strengthen the specific areas, which leads to a more evenly distributed workload among all muscles, rather than continuing to strain those that are already strong.

"A healthy person will respond instantly," Miles says.

While improvement may take anywhere from one to more than six treatments, Johnson felt a difference after a couple of sessions. She ran Boston in a PR time and followed it up with another 12-minute PR of 3:21 at Big Sur, just before her 50th birthday. She visits Colderbank when she feels an injury coming on—or before a race, even if she's feeling healthy. "Now, I might be a bit psychosomatic about it or something," she jokes. "But, hey, whatever it takes."

Overcompensation issues can be treated by using neuromuscular therapies, which give an overworked muscle a better chance to heal or resist injury in the first place. "By raising the integrity of the neuromuscular system, a runner is better able to resist the forces and handle the stress of the activity," Colderbank says. "The athlete will stay stronger through the run and through training." **RT**

## FAST FUEL

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## Gut Feeling

→ As sauerkraut, kombucha, and Greek yogurt pop up everywhere, probiotics—live bacteria and yeasts that supposedly improve gut health—are starting to make headlines. But do these little organisms improve running performance? Lisa Dorfman, a competitive runner and nutritionist based in Miami, says it's not that simple.

"I would not look at a probiotic as a performance enhancer," Dorfman says. "What probiotics can do is keep the runner healthier so they can train better."

A small 2014 study in the *European Journal of Applied Physiology* showed athletes' run time to exhaustion in the heat improved by 14 percent after taking probiotics for four weeks. A study in the *Journal of Science and Medicine in Sport* showed a 50 percent reduction in the incidence of upper respiratory and GI symptoms among elite athletes.

Heavy training wears down the immune system and increases a runner's risk of infection, especially when recovering from a hard workout, so probiotics can be a sensible precaution. They also improve digestive function. Here are a few tips to make sure that your probiotic intake is effective:

### DON'T FORGET PREBIOTICS

Probiotics love prebiotics, which are nondigestible fiber compounds that help the beneficial bacteria thrive in the intestine. Bananas, asparagus, chicory, and garlic are great sources of prebiotics.

Galactooligosaccharide, a prebiotic, is even found in breast milk—not a practical option for runners, but proof that prebiotics are important.

### GET THEM FRESH

Choose yogurt with the "Live & Active Cultures" seal on the package (all yogurt is "made with" live cultures), or find a product that guarantees a sufficient probiotic count all the way through the time of expiration. Manufacturers can play tricks with labeling—Dorfman recommends you research probiotics on [consumerlabs.com](http://consumerlabs.com) before buying.

### KEEP YOUR SYSTEM HEALTHY

"Eating on the fly, NSAIDs, sports drinks, life stress ... all of these decrease the amount of healthy bacteria in your gut," Dorfman says. Probiotics are just part of total gut health. So relax, eat natural foods, and recover with stretching or an ice bath rather than by popping ibuprofen. —Robert Lillegard

## PERFORMANCE PAGE

By Steve Magness

## COOL IT

DON'T PUT IN THE STANDARD EASY 2 MILES AFTER A WORKOUT—TRY THREE VARIATIONS ON THE COOLDOWN TO GET REAL BENEFITS.

After grinding through those gut-wrenching 400m repeats or exhausting yourself in a 10K race, there's one thing left to do before the workout is actually done: the cooldown. ¶ Traditionally, we've looked at the cooldown as a way to clear out all of those nasty, fatiguing byproducts. We've all shuffled around for a mile or two to satisfy our coach's wishes. And while this clearing-out-fatigue theory sounds great, there's more to the cooldown than we give it credit for. ¶ Researchers looking at how animals and people deal with various physical and psychological

stressors have started to see a pattern: Those who cope best have a rapid activation of the stress response, and then a quick and efficient termination of this response. In other words, our bodies know when to send all of those stress hormones and a rush of adrenaline to help us get through the stressor, but as soon as the stressor is removed, they should also switch quickly into a recovery mode. Switching off the stress response allows the body to start repairing and adapting in ways that lead to desired improvement.

The cooldown can be seen as a way to accelerate the termination of the stress response. That means getting our stress response to flip from one of breaking down (catabolic) to one of building up (anabolic).

Try these three ways to spice up the cooldown for maximizing training:

## THE SOCIAL COOLDOWN

Research has shown that social environment can have a large effect on the release of hormones like testosterone. In a study published in *Physiology &*

*Behavior*, researchers found that changes in testosterone after a soccer match were related to how connected the players felt socially to their teammates. Similarly, testing done on Olympic athletes has shown that the level of testosterone post-game changed based on whether the players were engaging socially with their teammates or spending that time isolated, playing around on their cell phones.

We can take advantage of this effect on the cooldown by interacting with others. Even if you work out alone, find a buddy you can call afterward to join you.

## THE RELAXED COOLDOWN

We can work at getting our body back to a relaxed state with the influence of external stimuli. Research has shown that simple things like music can reduce post-exercise cortisol levels. Cortisol is one of the body's primary stress hormones, which works to get us prepared for the exertion we are undertaking.

After you finish your workout, cool down to some music that is relaxed and soothing. If you listen to music while

you work out, switch from up-tempo to something more mellow.

## THE LONG COOLDOWN

We get caught up in a set pattern of 1- to 3-mile cooldowns. It becomes ingrained. We're missing out on the physiological and psychological advantages of a longer cooldown. An extended effort allows us to get in some easy aerobic work in a prefatigued state, creating a nice boost to our general aerobic abilities. It also helps accelerate the return to baseline. A relaxed and extended run tends to change stress levels to a more desirable level, almost like a recovery run would.

Instead of the traditional 2-mile cooldown, try to get in 4 or more miles at an easy pace. It will allow you to reap some training benefits while unwinding from the workout. **RT**

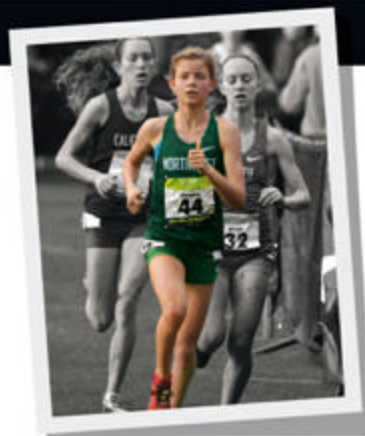


Steve Magness coaches professional runners and the cross country team at the University of Houston, where he is pursuing a doctorate in exercise science.





Runners incorporate inclines into summer training to help build a base for the fall.



▲ Allie Ostrander's hill regimen helped her win the individual title at Nike Cross Nationals in 2014.

## Peak Training

Whether it's a short burst or a long, slow climb, a variety of summer hill workouts prep runners for cross country. **BY ASHLEY RODRIGUEZ**



WHEN ALLIE OSTRANDER reached the final leg of the 2014 Nike Cross Nationals last December, she blazed over a series of hills and crossed the finish line of the 5K course in 17:19 to earn the individual title.

The Alaskan native had her hometown hills—part of her strategic summer training regimen—to thank. They conditioned her to power through the short, steep inclines in the race's final 1K.

"It's incredible how much a hill can take out of you," says Ostrander, who will start her freshman year at Boise State

this fall after graduating from Kenai Central High School in June. "The end of the race is when you're hurting the most, so having the strength and being able to power through hills helped me."

Training on hills in the summer is an important component to any cross country runner's buildup. But don't jump straight into hard, long repeats. There are better ways to incorporate climbs into your schedule.

### A Gradual Incline

Jay Johnson, a coach who works with high school athletes as the director of Boulder Running Camps, knows that running hills can help in multiple ways.

"Hill training does a great job making you stronger in terms of muscles and tendons," Johnson says. "It's a great way to strengthen the posterior chain, which is weak for 95 percent of runners." The posterior chain includes muscles like the gluteus maximus in your rear. Many common running injuries originate because of weakness in this area.

Johnson advises runners to incorporate hill work gradually. "Summer hill training is a time to build the aerobic system, not the time to do grueling workouts that build lactate," he says. "There is a time and a place for those workouts, and that time is later in the fall. The key for

high school runners and hill training is that the majority of a hill workout needs to be done aerobically."

Johnson recommends a long run on a hilly course once a week, coupled with semiweekly uphill strides of 100m–150m on a 1 percent grade, starting at 3200m pace.

The summer prior to her big win, Ostrander followed this pattern. Early on in her training cycle, she went for easy runs on hilly trails. This allowed her legs to adapt to hill running. In mid- to late summer, she eased into more intense workouts like repeats of 12 x 60–90 seconds up a moderately steep grade in sets of four, with a jog down the hill between reps and a half-mile jog between sets.

### Climbing Time

Each summer, Greg Weich, head cross country coach at Broomfield (Colorado) High School, makes a weekly 45-minute trip with his team to the mountains outside Boulder for what he refers to as "summer foundational training."

"These runs are usually between 60 and 70 minutes and generally include 1,000 to 1,500 feet of climbing," Weich says. "This is the

athletes' first introduction to lactate threshold on the ascents and also serves to get the athletes ready for hill repeats later in the season."

Climbs get steeper in July, when Weich and the team head to Golden Gate Canyon State Park in Golden, Colorado, for a three-day summer camp where athletes do two runs a day. To bridge the gap between the longer mountain runs and the fast, short hills, Weich uses strides and fartlek runs.

The Broomfield team will do more intense workouts as the season progresses. In the early season, they will do two sets of 5 x 40 seconds uphill at mile pace with a jog-down recovery. Eventually, they'll get even more specific, with workouts like 3-5 x 3:00 at 5K race pace over a hilly course that includes at least

two climbs of 30 seconds, with a 3-minute recovery jog.

The hills Weich's teams run in the summer correlate with the courses they'll be running in the fall. In 2011, he didn't have his team prepared for the tough terrain of the state meet course, and they lost after being undefeated in the regular season. They were prepared for the terrain in 2013, thanks to the workouts—and won the Colorado 4A cross country championship.

When his athletes run hills the way they do, Weich says, they reap psychological rewards as well.

"Athletes who haven't been strong hill runners gain confidence on these, particularly if they got to the mountains over the summer," Weich says. "These tough sessions done as a team bring us together as a group." **RT**

## Hill Country

Steep inclines on courses across the nation challenge runners of all levels.



### MT. SAC Walnut, California

► The course at Mt. SAC produces some blazing times, but runners have to trudge up the famed Switchbacks, Poop Out Hill, and Reservoir Hill, which are between 200m and 400m long and are brutally steep and grueling.



### HOLMDEL PARK Holmdel, New Jersey

► "The Bowl" comes just after the halfway point of the 5K course at Holmdel Park, home to the New Jersey state championship. The steepness at the peak of the hill forces many to walk their final few steps.



### WAYNE E. DANNEHL CROSS COUNTRY COURSE Kenosha, Wisconsin

► The start line of the Foot Locker Midwest Regional race is an intimidating sight. Runners stare straight at a half-mile hill. The final 2 miles have rolling hills as well.



### NORRIS-PENROSE EVENT CENTER Colorado Springs, Colorado

► Hodgson Hill in mile 2 of the Colorado state championship course is almost as tough on spectators who want to get a view. Add in that the course is at altitude, and it's one of the toughest state meet courses in the country.

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# Winning With Science

**Monmouth's Dylan Capwell becomes a national-title contender with a new training system based on lactate testing and heart rate monitoring.** BY JOHN A. KISSANE



DYLAN CAPWELL WENT through his high school career as something of an outlier. Although a gifted athlete who excelled at events from 400m hurdles to cross country, Capwell hadn't run fast enough to attract national attention until his final outdoor season at small Hopatcong (New Jersey) High School.

But Chris Tarello, Monmouth University assistant

coach, recognized a serious talent in Capwell. That became apparent in the spring of 2013 at the final competition of his career, the New Jersey Meet of Champions. Then 17, Capwell first claimed the 400m hurdles in a personal best of 52.43, the nation's No. 9 prep mark in 2013. Forty minutes later he returned to the track in the 800m, finishing third in 1:51.66. Tarello knew he had gotten lucky.

In the fall of 2013 at Monmouth, Capwell focused on base building. He dropped

his 800m PR to 1:49.39 during the indoor season. Outdoors, the freshman zipped to a 1:47.68 PR to qualify for NCAA nationals in Eugene, Oregon. (Capwell didn't run well, and Tarello blames the infamous Oregon pollen that "kicked his butt.")

The disappointment stung, but Capwell enjoyed the experience. "NCAAs was like, shocking," he says. "I mean, I'm from a Group 1 high school where we might have 35 people in the bleachers at meets. And then I go there and see thousands and thousands of people around. It was like, 'Whoa.'"

## A New Approach

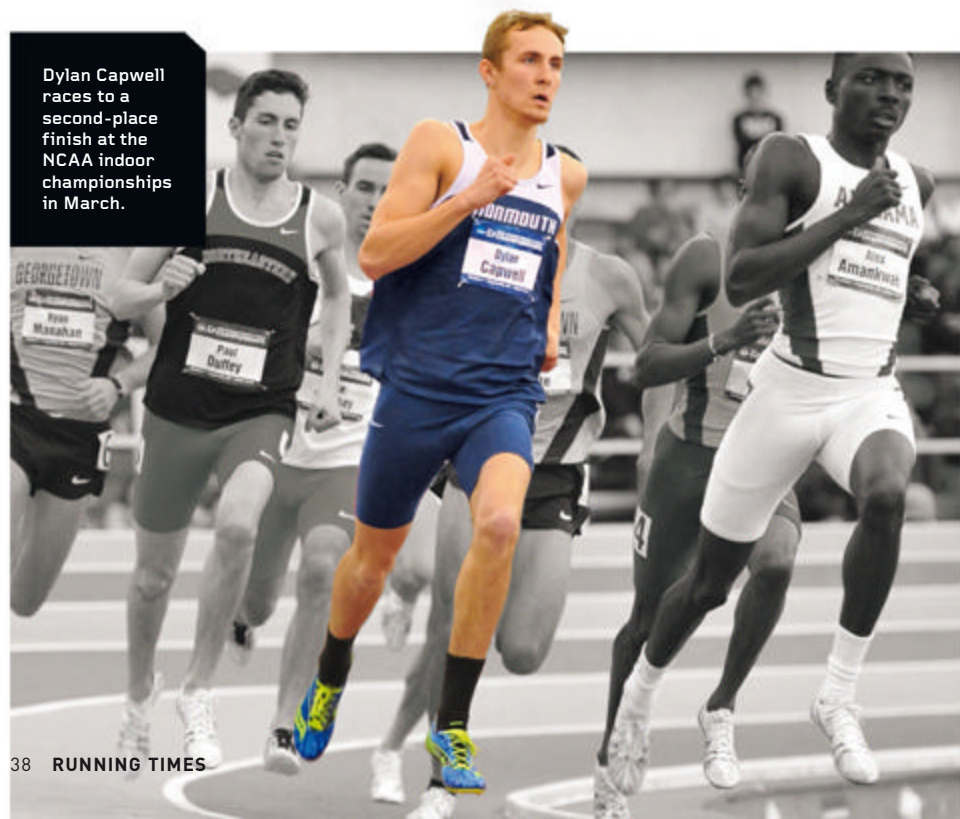
Tarello spent time last summer thinking about Capwell's performance at regionals and decided to overhaul his training. "I said to myself, 'I have a really special athlete here, and I'm not willing to chance his success with basically guesswork,'" Tarello says. "You're always struggling to

find the right balance and the right mix. And when you have an athlete like Dylan, you don't really have time to do that. I needed to make sure we got it right."

Villanova coach Marcus O'Sullivan advised Tarello to contact exercise physiologist Shannon Grady.

A former All-American runner at Florida and current elite triathlete, Grady has training in physiology, biochemistry, and nutrition. She began the company GO! Athletics in 2001 and today consults with nearly two dozen prep and collegiate teams—including Villanova—using her trademarked System Based Training (SBT).

The cornerstone of SBT is what Grady terms Physiological Profile Testing (PPT), an evaluation Grady has performed thousands of times over more than a decade. Grady says PPT evaluates nine biochemical systems, ranging from purely aerobic to purely anaerobic, through



Dylan Capwell races to a second-place finish at the NCAA indoor championships in March.



1 / Shannon Grady (kneeling) created System Based Training.  
2 / Monmouth athletes have fingers pricked between intervals.

“

## I HAVE A SPECIAL ATHLETE HERE, AND I'M NOT WILLING TO CHANCE HIS SUCCESS WITH GUESSWORK.”

—CHRIS TARELLO, Monmouth University assistant coach

periodic blood lactate testing during workouts specifically designed for each athlete.

For Capwell, Grady has a testing protocol based on repeat 800s, which he does every eight to 10 weeks. He starts with the first one in 2:50, and each interval gets 10 seconds faster, so Capwell usually finishes the testing having done seven repeats. The only rest after each is about 10 or 15 seconds, when Grady takes a drop of blood from his finger.

With the data she gathers from the blood testing, Grady gives coaches types of workouts and velocities that the athlete should be hitting during training.

Grady does the testing and provides training recommendations, but it's Tarello who comes up with the specific workouts. This year, Capwell's workouts have been more varied, with a small increase in volume, to a maximum of about 40 miles per week, and he uses a heart rate monitor during all non-workout runs to ensure optimal recovery. “Those were totally new for me,” Capwell, 19, says. “I just run for minutes in the zone I'm told and don't keep track of mileage.”

Capwell continued to improve during the 2015 indoor season. In February he claimed the Metro Atlantic 800m title in 1:46.82, breaking the previous New York Armory collegiate

record held by Robby Andrews. The next month, at indoor nationals, Capwell ran a 1:46.70, finishing second to Iowa State's Edward Kemboi, who won in 1:46.05.

### Better Days Ahead

After indoor nationals in March, Grady tested Capwell again and found that with his emphasis on top-end speed to peak for NCAAs, his aerobic capacity had been weakened. He returned to longer, slower intervals.

A typical workout was 5 x 1,000m in 2:47 to 2:53 with 3 minutes recovery. “This phase really made his races flat, but we knew it needed to be done, and we were willing to endure some subpar races to address this area,” Tarello says. The goal is for Capwell to be racing again in early June, at NCAAs, and possibly even later, at the U.S. championships at the end of June.

Given that Capwell is only a sophomore, his aim of winning an NCAA championship seems possible.

“Running is so mental, especially the 800m,” he says. “To be one of the best, you have to have the utmost confidence—almost cocky, but at the same time humble about it. [The blood testing] is scientifically telling me where I'm at, and that's a huge thing for confidence. I want to win NCAAs and that's a big goal. But I'd say it's in reach.” **RT**

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# Speed to Burn

Sonja Friend-Uhl's intensity shines through as she juggles work, family, and a desire to train hard. **BY MARC BLOOM**

SONJA FRIEND-UHL, WHO HAS WON 22 NATIONAL masters championships in track, road, and cross country since turning 40 in 2011, has no problem running fast. She just has to find the time to do it. ¶ Friend-Uhl celebrated her 44th birthday in March on the weekend of the 2015 USA Track & Field masters indoor championships in Winston-Salem, North Carolina. Friend-Uhl, who lives with her husband and two daughters in Brentwood, Tennessee, swept the women's 40–44 800m, mile, and 3,000m. In the 3K, Friend-Uhl triumphed by 55 seconds in 9:50.37 to set an American indoor 40–44 record.

That's far from her only record. In 2012, she set a world masters 40–44 indoor mile record (4:44.81) and an American masters outdoor 1500m record (4:16.99).

While Friend-Uhl has risen to prominence as a middle-distance specialist on the track, half of her national masters titles have come on the road and in cross country, in distances ranging from the 5K to the half marathon. She has also run two marathons, both in Florida where she used to live, with a 2:49 PR. But for now, she's focused on the oval. "I prefer the intensity of the track," she says.

A hallmark of Friend-Uhl's repertoire is her speed. As recently as last year, at 43, she ran the 800 in 2:10.79 and split 61.12 on a 4x400 relay. In early June, at the Music City Distance Carnival in Nashville, Friend-Uhl planned to go after Alisa

Harvey's 40–44 outdoor mile record of 4:46.29.

Friend-Uhl has been racing nonstop for close to 30 years. She was a state champion in high school in Delaware, a collegiate star at William & Mary and, as a professional, a member of six U.S. national teams competing in far-flung events like Ekiden relays in China, Japan, and Korea, and the first IAAF world road racing championship, a 20K in Hungary, in 2006.

On one of her Ekiden trips, to Beijing in 2005, Friend-Uhl and her American teammates went out for a run on the morning of their flight home. They got lost and ended up in a remote town, where shocked villagers berated them with threatening gestures. The chastened U.S. women made a run for it at better than 6 minutes a mile. With Friend-Uhl's direction as



## STATS

### Sonja Friend-Uhl

AGE 44

LIVES Brentwood, Tennessee

#### MASTERS PRs

800m 2:09.81 (2012)

1500m 4:16.99 (2015)

MILE 4:44.81 (indoor, 2012)

the team's elder—"My motherly instincts kicked in," she says—the athletes found their way back safely, 14 miles later. They all made it to the airport on time.

That control under pressure is typical of Friend-Uhl's balancing act. In addition to her daily workouts and raising two daughters, she puts in 20 to 25 hours a week as the physical wellness director of Cool Springs MD, a Nashville-area holistic health center, and travels the country as a lead trainer for Star

## TRAINING LOG

PRIOR TO USATF MASTERS INDOOR CHAMPIONSHIPS

WEEK STARTING MARCH 9, 2015

### MONDAY

8 miles easy plus strength/core circuit

### TUESDAY

5 miles easy plus 5 x 100m strides

### WEDNESDAY

2-mile warmup; 3 sets of 500m, 300m, 300m, 200m, 200m with equal rest between each rep and 600m recovery jog between sets.

500s > 85 to 88 seconds

300s > 48 to 49

200s > 30 to 31; 2-mile cooldown plus strength/core circuit.

### THURSDAY

6 miles easy

### FRIDAY

5 miles easy plus 5 x 100m strides

### SATURDAY

2-mile warmup; 4 sets of 1,000m in 3:07 to 3:11 with 600m jog recovery between each; 2-mile cooldown plus strength/core circuit.

### SUNDAY

Off

WEEK STARTING MARCH 16, 2015

### MONDAY

5 miles easy plus strength/core circuit

### TUESDAY

5 miles easy plus 5 x 100m strides

### WEDNESDAY

2-mile warmup; 6 x 300m in 55 to 56 seconds and 6 x 100m; 3 x 100m strides; 1-mile cooldown plus strength/core circuit

### THURSDAY

3 miles easy plus 5 x 100m strides

### USATF MASTERS INDOOR CHAMPIONSHIPS

### FRIDAY

3,000m > 9:50.37

First place 40–44, U.S. record

### SATURDAY

MILE > 5:03.06

First place 40–44

### SUNDAY

800m > 2:17.42

First place 40–44

Trac, a fitness equipment manufacturer based in Vancouver, Washington. Friend-Uhl, who competes for the Atlanta Track Club, does private coaching for select runners in person and online. She's also a volunteer assistant at Vanderbilt University, mentoring the women's track and cross country runners.

"I've always had tremendous drive," Friend-Uhl says, as she prepared to get her outdoor track season into high gear. "Even in high school—I was in the band, choir, student government. I ran track and cross country and played basketball."

Nowadays, while every second counts for Friend-Uhl on the track, every minute counts in her day or week. In March, she achieved her masters indoor track triple with a sinus infection. "I know I have to be careful not to drive myself into the ground," she says, "but I feel most alive when I'm pushing myself."

It's no wonder that at times Friend-Uhl and her husband, Brad Uhl (pronounced "Yule"), who works for the U.S. Department of Justice, have to call in emergency reinforcements—Sonja's mom from Florida or Brad's mom from Pennsylvania—to help with daughters Brianna, 13, and Alexa, 6.

Friend-Uhl never misses an opportunity to multitask. On a trip to Atlanta for Brianna's volleyball tournament, she scooted over to Georgia Tech for a track workout: three sets of 1 mile and a 400m with a lap recovery between each interval. She averaged 5:35 for the miles and 66 seconds for the 400s.

In 2000, at 29, Friend-Uhl, achieved her lifetime PRs of 2:06.4 in the 800m and

4:13.9 in the 1500m. With her 4:16.99 1500m in 2012, Friend-Uhl slowed only 3 seconds in 12 years.

Friend-Uhl recognizes that, reaching her mid-40s and training 40 to 50 miles a week, she walks a fine line between ambition and reality. After outstanding 2011 and 2012 seasons, she lost valuable time in 2013 to injury.

To help control her zeal and get relief from the pressures of designing her own program, this year Friend-Uhl enlisted the services of former elites Andrew and Amy Begley, who coach the Atlanta Track Club. The Begleys have already been a big help, Friend-Uhl says. Early in the spring, while still recovering from her illness, she was itching to hop a plane to California for the Carlsbad 5000. Andrew talked her out of it.

This summer, in addition to competing in the USA masters outdoor nationals in Jacksonville, Florida, Friend-Uhl is hoping to run the women's masters 3,000m exhibition at the U.S. nationals, June 25 to 28, in Eugene, Oregon. She'll be aiming for the American 40–44 outdoor record of 9:27.45 set by Carmen Troncoso in 2000.

"I really appreciate the masters," Friend-Uhl says. "We celebrate what we do and embrace one another. By pushing me, my opponents help me discover a better version of myself." **RT**



**I FEEL MOST ALIVE WHEN I'M  
PUSHING MYSELF."**

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Runners make their way along the Continental Divide Trail in Colorado, en route to their next stop at the Hut Run Hut camp.

# Run, Eat, Camp with the Stars

More elite ultrarunners are creating retreats to share their favorite trails, food, and training tactics with the masses.

BY JUSTIN MOCK



IF YOU'RE CURIOUS ABOUT where the fastest of trail runners log their miles, adult trail and ultra camps in picturesque locales—for anywhere from \$350 to almost \$4,000—offer the chance to get up close and personal with some of the nation's top talent.

## ALASKA MOUNTAIN ULTRARUNNING CAMP

**WHERE** ▶ Juneau, Alaska

**REMAINING 2015 SESSIONS** ▶ June, and twice in August 2015

**HOST** ▶ Geoff Roes, 2010 Western States Endurance Run champion

**COST** ▶ \$1,475

▶ Roes, the 2009 and 2010 Ultrarunner of the Year, has long extolled the virtues of living in Juneau, calling it one

of America's best trail towns. Through his camp, he's introduced more than 100 runners to the beauty of the last frontier. Roes has now hosted 12 camp sessions dating back to 2011, and even offered a winter camp in February 2015.

Roes keeps participation numbers low—about 12 people per session—and they log about 20 hours of running in five days, with 20,000 feet of vertical gain and loss through rainforest, coastline, and alpine ridges, all in search of what Roes calls the “child-like pleasure of mountain running.” Working from a base 15 miles outside of Juneau, each run affords athletes the opportunity to move faster or slower, depending on their own personal goals and fitness.

“It's definitely designed





to be a running vacation or retreat,” Roes says, adding that much of the discussion and education takes place on the trails. “I coach through experience and show what I do, as opposed to just being talked at.”

Roes is also a trained chef who claims to make a mean halibut taco. Meals include local seafood and organic produce, and everything is made from scratch. “A lot of people eat better here than they ever do,” he says. “Some joke that they’ll come back just for the food.”

#### HUT RUN HUT

**WHERE** ▶ Aspen to Vail, Colorado  
**THREE 2015 SESSIONS** ▶ July, August, and September

**HOST** ▶ Rickey Gates, Salomon elite team member

**COST** ▶ \$1,995

▶ In its second year, and having expanded to three six-day sessions, Gates’ 100-mile Hut Run Hut takes a group of up to 11 on a singletrack—or in some cases, no trail—alpine path from Aspen to Vail along the Continental Divide. The

group stays at the 10th Mountain Division huts along the way, a collection of bunkhouses named for a World War II battalion. Gates worked at the huts during high school and now sprinkles history lessons and mountaintop dance parties into the route.

“It’s a fun trip running across the Rockies,” Gates says. “Focus on fun.”

Runners typically start each day at 10 a.m. and arrive at the next hut by 4 p.m., with the day’s journey ranging from 10 to 26 miles. “It’s not for the speedster—I hope no one comes here just wanting to become a better 50K runner. This is backcountry, so we really try to stay together,” Gates says.

Last year’s group was a mix of men and women from around the world. Rumor had it that, fueled by Gates’ humor and the route’s thin air, they were mostly all smiles while pushing through creeks, slacklining in the afternoon, and sipping boxed wine under a starlit sky.



1 / Rickey Gates’ camp features backcountry running and fun downtime.

2 / Geoff Roes encourages campers to take in the scenery in Juneau, Alaska.

3 & 4 / Part of the mission of Team RWB is to help veterans reintegrate into civilian life.



“It’s not a camp, it’s a migration,” Gates says.

This year some special trail-running celebrities will join the mix: Dylan Bowman, Jenn Shelton, and Scott Jurek.

#### ROB KRAR ULTRA CAMP

**WHERE** ▶ Flagstaff, Arizona

**WHEN** ▶ July 2015

**HOST** ▶ Rob Krar, 2014 Western States Endurance Run and Leadville Trail 100 champion

**COST** ▶ \$1,850 (private suite)/\$1,350 (shared suite)

▶ Coming off an incredible 2014 that included three 100-mile wins, Krar is looking forward to 2015. “I’m excited about the changes going on in my life. Leaving work [as a pharmacist] allows me the chance to give back and become immersed in the ultrarunning community,” he says. His new camp is a key part of that goal.

Krar and his wife, Christina Bauer, are hoping to highlight what makes Flagstaff a hotbed

for runners of all kinds. “We live in a beautiful part of the country that is a perfect place for a vacation, and it also happens to be a perfect place to train,” Krar says. “I want to share my expertise and advice, teach through various workshops, entertain with inspiring, expert speakers, and of course share a love of the mountains and trails.”

The week-long retreat offers mileage options for runs that are expected to take place in Flagstaff’s San Francisco Peaks, Sedona, and the Grand Canyon. Guest speakers will include Stephanie Howe, Andy Jones-Wilkins, and Ian Torrence.

When participants aren’t running, Krar hopes they’ll be taking in some local





culture and a lot of his favorite food. Bauer plans to cook up a few dinners in their home, some picnic lunches, and homemade ice cream, too. The couple will plan meals based on what's fresh from their own garden and in season at the farmer's market.

## RUN MINDFUL RETREATS

**WHERE** ▶ Boulder, Colorado

**TWO 2015 SESSIONS** ▶ June and August

**HOST** ▶ Timothy Olson, 2012 and 2013 Western States Endurance Run champion and course record-holder

**COST** ▶ \$375

▶ Olson credits much of his success in the sport to meditation, which helps him to balance family, running, nutrition, and mindfulness. Olson and his wife, Krista, are starting a camp based on their practice of positivity and connecting mind, body, and spirit. The weekend-long camp will mirror much of the way their family lives.

"This won't be a typical running camp focused on performance," Olson says. "We're going to focus on five components: patience, presence, acceptance, reverence, and perseverance."

That doesn't mean that running won't be a critical aspect of the camp—a few outings on the trails of Boulder are included.

"We're going to enjoy the trails and get some big runs in—back-to-back long runs, tag some peaks maybe," Olson says. Before and after

those runs, the Olsons will lead sessions on meditation and breathing, helping runners to keep a loose and relaxed form as they seek out what Olson calls a "rhythm and flow" state.

"Hopefully through the retreat we'll help runners to find that energy and help them to have it more often," Olson says, "and then they can take that bliss back to their daily lives."

## TEAM RWB TRAIL RUNNING CAMP

**WHERE** ▶ Rocksprings, Texas

**2015 SESSION** ▶ October

**COST** ▶ \$315

**HOST** ▶ Liza Howard, 2011 USA Track & Field 100K and 50-mile national champion

▶ Guest coaches at this four-day camp have included Max King, Pam Smith, and Nikki Kimball. Howard is one of four directors and has won several 100-mile races.



**5 / At the UPRISE women's retreat, participants get access to top-notch therapy.**  
**6 / The trails and terrain in Hawaii make for breathtaking group runs.**



The weekend, held at Camp Eagle, is a greater outreach of Team RWB's mission to help combat veterans reintegrate into civilian life. With 100 participants at one time, half are typically veterans and half are civilians. "We divide the runners into four groups, depending on fitness. We'll run, have a class session, and then run again," Howard says.

Classroom sessions introduce runners to nutrition concepts, pacing considerations, and effective aid station strategies. The groups run twice each day and all abilities are welcomed.

"It's just a great time of year in Texas," Howard says. "Everyone leaves happy."

## UPRISE PERFORMANCE CAMP

**WHERE** ▶ Whistler, British Columbia, and Waikoloa Village, Hawaii

**SESSIONS** ▶ July 2015 and June 2016

**HOST** ▶ Stevie Kremer, 2013 World SkyRunner champion

**COST** ▶ \$3,495 (Hawaii)

▶ Kremer, along with a team of sports medicine professionals, hosted the first UPRISE women's trail running camp in January 2015, on Hawaii's Big Island. A camp has been planned in

British Columbia this summer, and a return trip to Hawaii is expected in 2016.

"Hawaii is the perfect location for incredible trails, varied terrain, and a relaxing beach setting to rest after a killer day on the trails," Kremer says.

Camp participants are expected to be able to run 10K on the singletrack, but Kremer says that enjoying the sport is more important. "Elites we'll take to another level and newcomers will get the tools to grow and enjoy the challenge," she says.

The five-day affair also includes gait analysis, strength training, and workshops on topics like nutrition and race strategy. Participants can also receive blood analysis and VO<sub>2</sub> max and lactate testing.

With runs on the beach, in the jungle, and on the island's active volcano, Kremer calls the terrain diversity the "beauty of these camps." The trails are "super flowery, and with some rocky stuff, but we stop and regroup, and get the occasional photo of the jaw-dropping scenery." **RT**



**WE'RE GOING TO ENJOY THE TRAILS AND GET SOME BIG RUNS IN."**—TIMOTHY OLSON

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Nick Willis spikes up before the 2014 Michigan Track Classic mile, a race he organized and would go on to win.

# A MAN IN FULL

NEW ZEALAND'S NICK WILLIS HAS BEEN AT THE TOP OF THE SPORT FOR MORE THAN A DECADE, BUT HIS SPEED AND MOTIVATION ARE STRONGER THAN EVER. AT 32, AS HE SETS OUT TO CROWN HIS CAREER WITH ANOTHER MAJOR MEDAL, HE'S DEVELOPED THE WISDOM TO KNOW WHAT WORKS.

BY CATHAL DENNEHY / PHOTOGRAPHS BY PETER HOFFMAN





The twilight Michigan Track Classic brings fans close to the action.

**IT'S A** freezing Saturday evening in Boston, early February, and the city shivers in a bone-chilling wind. The streets are dark, deserted, the ice-rink sidewalks flanked on each side by imposing, 5-foot mounds of snow. A few thousand track fans begin filtering out of the Reggie Lewis Center in Roxbury, hunching their shoulders and holding their arms close, trying to preserve heat.

Inside the arena, after the fans have gone home, one of the world's best milers runs lap after tedious lap with fluid precision, sweat pouring down his face. His blank expression shows little sign of the extraordinary stress his body endured a short while ago, nor is there any euphoric afterglow at his achievement. An hour earlier, Nick Willis of New Zealand had set a national indoor record for the mile, destroying a world-class field over the final two laps to win in 3:51.61.

His work wasn't done. After the race, everyone wants a piece of the champion—a handshake, an interview, an autograph, a selfie.

Willis, 32, is no stranger to this. More than a decade has passed since he ascended to the sport's top tier. His 3:32.68 1500m in Rome in 2004 marked him as a 21-year-old with a bright future and a bucket of talent—even though he'd already come pretty close to throwing it all away.

By now he knows, better than most, what the view is like at the top. In 2006, Willis won the Commonwealth Games 1500m and became a star in his native country. Two years later, in Beijing, he won the Olympic silver medal.

His longevity, though, sets him apart. Willis' improvement curve still arcs upward despite accepted wisdom insisting he should be in decline. Last year, at the age of 31, he ran personal bests for the 1500m (3:29.91) and mile (3:49.83). Time has so far given him a free pass, and much of that is due to

the three people who make Willis tick.

His own little holy trinity is present that night in Boston, positioned on the infield as Willis laces up his running shoes and prepares to click off his postrace workout of 10 x 400m in a controlled 64 seconds with a 100m jog recovery. There, still beaming over his performance, stands Willis' wife of seven years, Sierra, the woman whose devotion to his career sees her fulfilling several roles—nutritionist, chef, coach, psychologist, and more. In her arms is Lachlan, their son, 19 months old. He's the reason Willis sleeps a little less these days, but he's also the reason he approaches the sport with a fresh, balanced perspective, unburdened by the stresses he carried in the past.

Just across the track from them, a silver-haired man stands in isolation, observing his protégé from beneath a navy University of Michigan hat. He looks on as Willis leans forward, clicks his watch, and breaks into his elegant stride. The smile Willis wore for much of the past hour is gone, the race already consigned to history, his attention shifted as fast as that of a deli worker turning to another customer. *Next.*

As Willis circles the track, the coach, Ron Warhurst, pivots, following him with his eyes, studying his pupil. There is no denying it: Willis looks better than ever.

**It could have been different. Rewind 13 years,** back to the day Warhurst first laid eyes on the cocky, hyped-up kid from New Zealand. Truth be told, the Michigan coach wasn't all that impressed. He went to the airport with one of his athletes, Tim Broe, to collect the incoming freshman, and Warhurst can still remember the



Willis wins the 2015 New Balance Indoor Grand Prix mile in 3:51.61.



words he quietly said to Broe upon catching sight of the new arrival: “He looks a little soft.”

A few days later, he put Willis through his first workout. Upon seeing him run, Warhurst again turned to Broe: “Timmy, he might look a little soft, but he can run like hell.” The only problem with the freshman was that he could also drink like hell.

His drinking habit went back to his teens, when it wasn’t so much an indulgence as a way of life for many youngsters in Lower Hutt, New Zealand. “Basically, since I was 12, I binge drank twice a week, every week,” he says. “It’s what all my friends did, and I thought, ‘Do I find a new group of friends, or do I join in?’ So I dived in, headfirst.”

By the time he got to Michigan, Willis found that the freedom allowed by Warhurst only added to his hedonistic tendencies. “I was the kid trying to get everyone out to parties,” he says, “trying to teach these young rookie Americans what the real world was like. I justified the drinking because I always went to bed at a good hour, but it made me do stupid things.”

Warhurst is matter-of-fact about that time. “For one year, Nick was full-out, like most 19-year-old kids away from home,” he says. “He got it out of his system. As they get older, they grow out of that phase, and if they don’t, they’ve got serious issues.”

By then, Willis already did have relatively serious issues, though on the track his talent was so great that it papered over the cracks. He had been a stand-out junior, having run a 4:01 mile at the age of 17,

with a hard-wired desire that couldn’t be coached. It was there as far back as he could remember, back when he began competing as a 5-year-old.

That burning desire, Willis believes, was spawned from the void felt by the absence of his mother, who passed away from cancer when Willis was 4. “I had an unnatural amount of motivation,” he recalls. “I’ve always used sport as a means to get respect and adulation from the community after my mum died. I wanted to feel like I had some means of significance. There was something in my mind, some innate desire. I had to win.”

Willis rarely lost, but at Michigan he became aware that his drinking was leading him down a dark path. “I asked myself, ‘Is this who I really want to become, a fella that uses and abuses people?’ I realized, if my mum’s up there in heaven, then there must be a God up there, too.”

Willis was brought up as a regular church-goer, but he always had to be dragged there. Now, he *wanted* to take the leap of faith. His older brother, Steve, put him in touch with a group called Athletes in Action, a Christian sports ministry on campus. Willis also began to finally deal with the grief of his mother’s passing, which he had stored up throughout his adolescence. “It was a really healthy process,” he says. “I started to actually enjoy crying and remembering my mother. My outlook on how I approached university life was completely different from then.”

It was a complete turn. Willis hasn’t touched a drop of alcohol since, and he also decided to take two full years off from relationships. “I had nothing to do with girls other than hanging out in a group,” he says. “I had to learn to be a man first.” It wasn’t long after, while walking through the Michigan campus, that he crossed paths with Sierra, a tall, slim, black-haired English major with a wide smile. “I thought I had no chance,” Willis recalls. They were part of the same Christian organization on campus, but they didn’t know each other.

When Willis plucked up the courage to ask her out, he did so in his usual manner—by going all-out. “He gave me an over-the-top invitation to a dinner party for me and my friends,” she says. “They got dressed up, bought us flowers, then had a swing dance instructor come in and give us a private lesson. After that, I pretty much knew.” Eleven months later, they married.

“Unfortunately,” Willis says with a smile, “I’ve never lived up to that sort of romance again.”

**“I HAD AN UNNATURAL AMOUNT OF MOTIVATION ... THERE WAS SOMETHING IN MY MIND, SOME INNATE DESIRE. I HAD TO WIN.”**



Willis spends time at home in Michigan with Sierra and Lachlan, who keep him grounded.



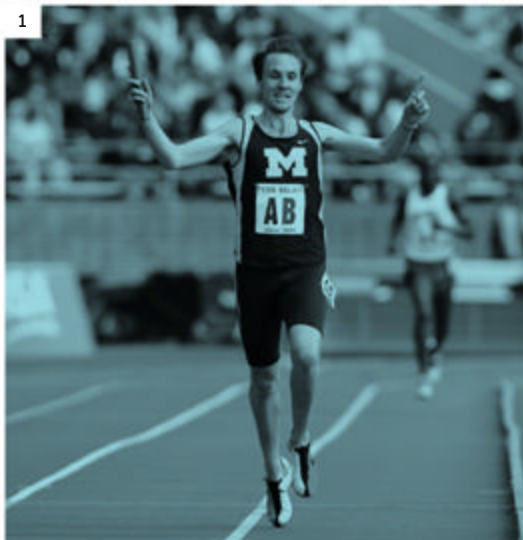
### Over the past eight years, the couple—who

split time between Ann Arbor, Michigan, and Lower Hutt, New Zealand—have traveled the world together, becoming a two-person cog in the wheel of the movable show that is the track and field circuit. Indeed, it can occasionally feel like a circus—new place, new stadium, new fans, same performers—but the couple are acutely aware of how lucky they are to live this life. “I love it,” Sierra says. “It’s a strange little bubble of a world. I felt out of place to begin with, but as time has gone by I’ve gotten to know people better, and I feel at home.”

Being able to feel at home on the road is one way Willis maintains his enthusiasm for the sport. Running fast might have given him this life, but he’s determined not to narrow his existence to that alone. Willis cultivates friendships all over the world. In Spoleto, Italy, for example, he is a hero to local runners, owing to an encounter in 2010 with the proprietor of a local newsstand, Piergiorgio Conti, a 2:22 marathoner he met while based in the city between races. They remain close friends today, and Willis paced Conti through much of the New York City Marathon in 2013. “Things like that make us excited about going to Europe every year,” Willis says, “not just to race, but to catch up with friends.”

Along with that, Willis tries to strike a balance in his life—which can, by its nature, feel sometimes narrow—by maintaining outside interests. In his spare time, he participates in speed golf, a sport where your time around the course is as essential as your precision with a club; he finished 13th in the world championships two years ago.

Willis has tried his hand at meet directing. For the past two years, he and Sierra have organized the



1/ Anchoring his Michigan team to a win in the DMR at the 2005 Penn Relays.



2/ The silver medal from the 2008 Olympic Games.



3/ With Sierra after the silver-medal race in Beijing.







4



4/ Willis moves up through the pack to win a silver medal in the 1500m at the 2008 Olympics.

5/ Sierra and Willis met at the University of Michigan and still call Ann Arbor home.

6/ Bringing the action to the fans at the Michigan Track Classic.

5



6

Michigan Track Classic, a small-venue event that boasts an elite field. The race was initially created to help Willis prepare for the 2013 world championships without having to travel to Europe after the birth of his son. It proved a massive success, but they have since taken leave of the organizational burden. “You’ve got so many issues with liabilities,” he says. “Those stresses burned me out quite a bit afterward, dealing with the anxiety that if something went wrong, you could get thrown in prison or sued.” Willis now plans to stick to competing in races for the next couple of years as they travel the Diamond League circuit every summer.

While traveling, they prefer to rent apartments rather than stay in designated meet hotels. That way they can better immerse themselves in the local culture. When you’ve been on the track merry-go-round for over a decade, it’s one way to keep things fresh. “We basically get to be tourists on someone else’s dime,” Willis says. “It can become a bit routine, so you need to enjoy the culture if you’re doing it as long as I have.”

Indeed, little has changed, with the exception of Sierra and Lachlan joining him, since Willis began living the professional athlete lifestyle over a decade ago. Sure, he got faster, richer, and more recognizable, but he drives the same car now that he did when he first turned professional 11 years ago—a \$13,000 Pontiac Vibe.

As with his coach, his training, or his life in Ann Arbor, Willis sees no reason to change. He’s found the formula now; he knows what works.

### “Everything he’s learned has been from me,”

Warhurst says, “and he learns about himself from the training. He trusts me explicitly with workouts and I trust him with his judgment, so he could probably train himself. But every athlete needs someone to ask, ‘Am I doing it right?’”

Recently, Willis has trained like a 5,000m runner for much of the year, finding that it produces the best results over 1500m. He covers 85 to 90 miles a week in six or seven training sessions, and he usually takes a rest day. One day is devoted to an 18- to 20-mile long run. Unlike most 1500m runners, Willis does just two workouts a week, but both will be double workouts in the Warhurst style. One will be a tempo run followed immediately by track intervals; the other will be hill reps with track intervals to follow.

Shortly before that opening race of the year in Boston, for example, Willis completed a 4-mile tempo run at 5-minute pace, then ran four 1,000m reps in 2:50, two 300s in 41, two 400s in 56, and closed it all with a 600 in 1:21—at 7,000 feet above sea level in Flagstaff, Arizona. “I like to finish



workouts with faster running,” Warhurst says. “The whole thing about international racing, from 600 home, you gotta be able to run fast.”

On his easy days, Willis lets his body tell him how fast to run. “It can be 5:40 pace or 7:40 pace,” he says. “I have a theory: You run as fast as you can handle, without hindering your workouts.”

Though coach and athlete usually come to a consensus on training, the one constant source of friction is race tactics. “Get off that rail, stay off that rail!” Warhurst has said the words so often that they’ve almost lost their meaning. “He’s stubborn,” he says of Willis. “His mentality is: ‘I’m running a shorter distance.’ I say, ‘It doesn’t matter a shit what distance you’re running if you can’t move when you want to move and use your speed.’”

Warhurst may seem like a tough nut, and he is. Before beginning a 35-year coaching tenure at the University of Michigan, he served in the U.S. Marine Corps and earned two Purple Heart medals for service during the Vietnam War. One time, though, late in the summer of 2008, Warhurst’s star protégé managed to make him cry.

“We’ve got video evidence,” says Willis, referring to the aftermath of the Olympic 1500m final in Beijing, in which he took the silver medal behind Kenya’s Asbel Kiprop. That effort still ranks as the undoubted highlight of his career, though it has been a career marked by enduring achievement overall. Last summer, he fulfilled a lifelong ambition to run under 3:30 for 1500m when he clocked 3:29.91 to finish seventh at the Monaco Diamond League meet. “That was my Roger Bannister moment,” Willis says. “All runners have that number that you dream is possible, and you think, ‘Do I dare to dream?’”

That feeling of finally being able to call himself a 3:29 man was one of his ultimate highs. There have been lows, too. In 2009, Willis underwent surgery on a hip so ragged he could barely walk. In 2010, surgeons cut him open again to repair the meniscus in his knee, and again in 2011. In 2013, he popped a calf muscle in an early-season race and was unable to regain top form for the remainder of the season. For many of those years, his creaking body kept his ambition in shackles.

And then there was London, the 2012 Olympics—the one that got away. That hurt. Seven weeks out from the games, he was flying, and completed one of the best workouts of his life—400m, 800m, 1200m, all run at 59 seconds per lap,

followed by 2 x 200m in 26, 2 x 300m in 38, and 400m in 50.5. The problem was, it was too good.

“We got greedy,” he says. “I thought in order to win gold, I needed to be in sub-3:30 shape. I should have waved the red flag and gone back to mileage for a few weeks.” He didn’t. Instead, he pushed all-in, which left him running on tired legs in the 1500m final. He finished ninth. “It took close to two years to get over,” he says. “It was only just recently I’ve been able to go back and watch the race.”

Other aspects of the sport can be a source of frustration as well, such as the scourge of doping. Eight months after the 2008 Olympic final, in which Willis crossed the line third, race winner Rashid Ramzi tested positive for the blood-boosting drug CERA, the next-generation form of EPO, and Willis’ initial bronze medal was upgraded to silver.

Did Willis know, standing on that starting line, that Ramzi was dirty? “There wasn’t a doubt in my mind,” he says swiftly. Wasn’t he angry? “The idea of anger never crosses your mind. Most people who are connected to the sport have a pretty fair idea what’s going on, so the anger is when people are getting away with stuff. When someone gets caught it’s a time for celebration.”

Today, Willis believes the sport is cleaner than in the past. “I obviously think it still happens, but it’s more obvious now [when someone is doping] because you’ll have one or two people way out in front, whereas in the past everyone was on it, and they were all up in the front, bunched. I’m fortunate that I haven’t had to face that temptation [to dope] that people from certain countries do, or sections of our sport who have managed to set up these walls of protection where there’s secrecy around what they’re doing, where that temptation is much greater.”

**There was a time, not long after the London Olympics,** when Willis thought maybe he should pack it all in—go back to school, find a job, sit at a desk—but he soon snapped out of that phase and recommitted to training. “His personality is so intense,” Sierra says. “He’s an all-or-nothing guy; it’s impossible for him not to give 100 percent.”

And so, at 32, he runs on. Back inside the Reggie Lewis Center, reeling off 32-second laps, Willis’ eyes maintain a focus up the track. He knows that the seeds sewn here will eventually be reaped come summer. As he runs, Warhurst maintains his gaze

**“THE WHOLE THING ABOUT INTERNATIONAL RACING, FROM 600 HOME, YOU GOTTA BE ABLE TO RUN FAST.” —RON WARHURST**

At age 32, Willis shows no sign of losing his foot speed.



from the infield. He's four decades Willis' senior, but there's a hint of admiration when he speaks of him.

"He's a real cerebral kid, real bright," Warhurst says, indirectly explaining how Willis is so good after all these years. "He takes good care of himself. We train pretty hard, but we pick certain times where we really hit it. I think he can run 3:28—there's nothing that tells me he's any slower than he was."

Across from Warhurst, Sierra puts Lachlan down on the track and, as soon as the toddler's feet touch the ground, he bolts from his mother's grasp. "People say he looks like me," she says, "but the energy levels and the physical exertion are more like Nick. He has that intensity, and he's very driven. He gets on his little bike and wants to practice and doesn't want to stop. I see a lot of Nick's personality in that."

Meanwhile, slowing to a stop on his 10th and final repetition, Willis is shaking hands with his training partners, among them top American miler Will Leer, after a successful night's work. There's a content look in Willis' eyes. He knows that race was just a checkpoint, a midterm exam that he has passed with ease. The bigger fish, the mile predators who truly pose a threat, will lie in wait later this summer—Kenya's like Kiprop and Silas Kiplagat, America's Matt Centrowitz, Algeria's Taoufik Makhoulfi. They're all several years younger and will pose a challenge that Willis must overcome if he is to medal at the world championships in Beijing in August or at next year's Olympic Games in Rio.

He already has an Olympic medal, but what fuels him now is proving it was no fluke. "It'd be a way to stamp my career," he says. "Quite a few people



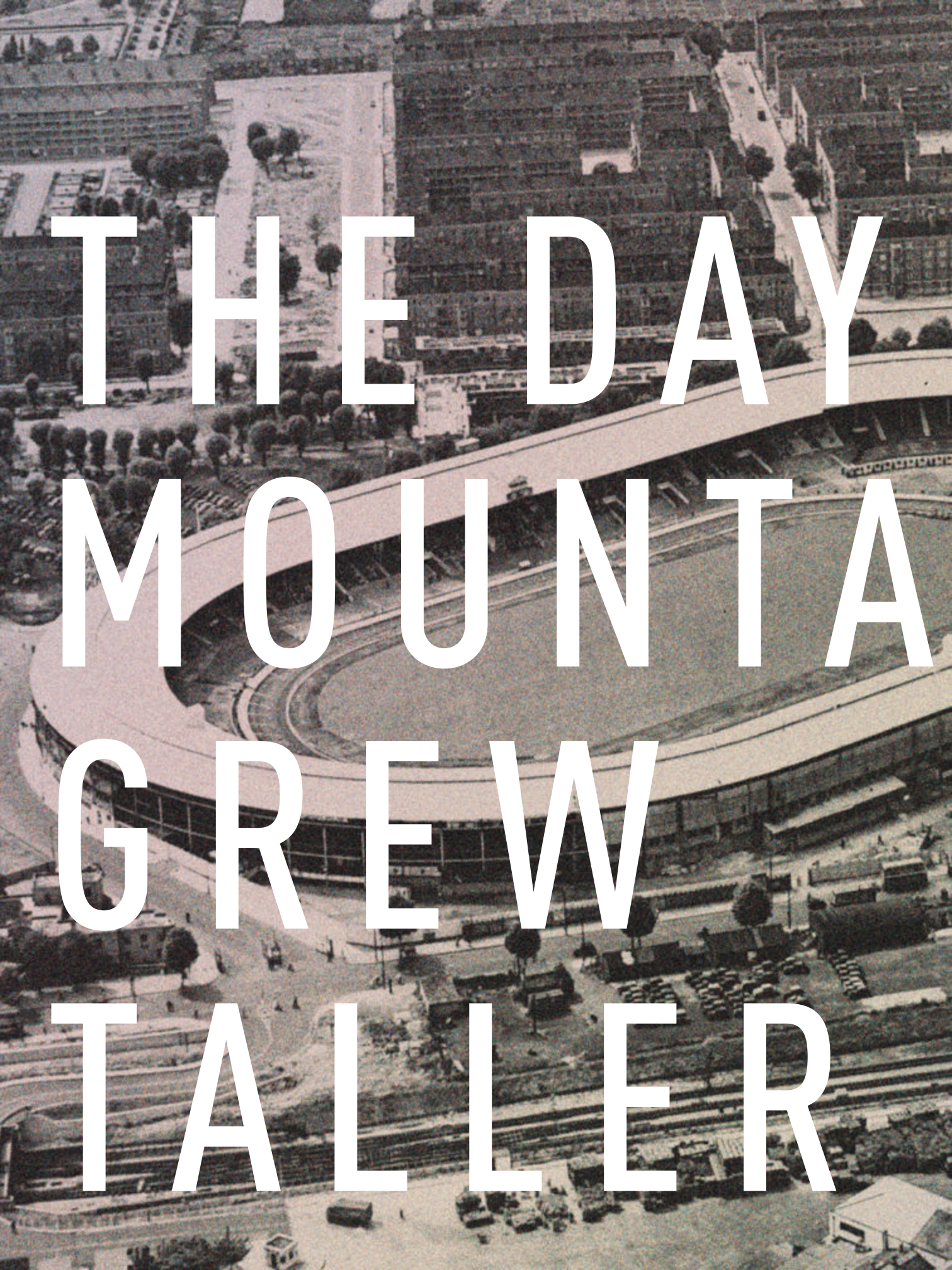
Ron Warhurst (left), who has guided Willis for 13 years, discusses the workout of the day at the University of Michigan track.

who win a medal are one-hit wonders, and I'd really like a backup medal. London was an opportunity to do that, and I screwed it up."

Opportunity looms again. Willis intends not to squander it, and nothing in his form suggests it's an unrealistic goal. Earlier this year, he ran the fastest 100m of his life, 11.5 seconds, in training. He is that rare species—an athlete who has developed wisdom at an age when he's still young enough to use it. What his body might have lost in powers of recovery, his mind has gained by developing an intuitive understanding of what works and what doesn't. "For a long time, I wasn't wise enough to do the right training," he says, "but as you get older, you have so much experience to make wise decisions."

It's for this reason the finish line is still nowhere in sight. "I love this sport, and I want to be involved in it to some capacity for my life," he says. "I can't think about retiring. How many people in the world can say they have a chance at an Olympic medal?" **RT**





THE DAY  
MOUNTA  
GREW  
TALLER



An aerial, black and white photograph of a large stadium, likely the Melbourne Cricket Ground, with its distinctive curved roof. The stadium is surrounded by urban development, including roads, smaller buildings, and parking areas. The image is used as a background for the left side of the page.

# THE IN

FIFTY YEARS

AGO, AUSTRALIAN

RON CLARKE

SPED TO A WORLD

RECORD IN A RACE

THAT THRILLED

THE CROWDS

AND CHANGED THE

LANDSCAPE FOR

EVERY RUNNER.



**BY**

**ROGER**

**ROBINSON**



# 4:40 P.M., JULY 10, 1965, WHITE CITY STADIUM, LONDON.

The race we were excitedly waiting for was the 3-mile. At last, 20 runners emerged from the tunnel and began their stride-outs down below us on the old black cinder track. Instantly, we picked out the commanding figure of Ron Clarke, the new world-record holder from Australia. It took longer among the cluster of runners to find the teenage American phenomenon Gerry Lindgren, and we stared in astonishment that such a frail-looking boy could have shared the world 6-mile record with Billy Mills only two weeks before. We spotted European 5,000m champion Bruce Tulloh, barefoot as usual, and the blond Hungarian Lajos Meocsér, the lanky Irishman Derek Graham, and—yes, there, bigger than anyone in the field except Clarke, Londoner Mike Wiggs, who 10 days earlier had replaced Tulloh as the British 5,000m record-holder.

This was a world-class field, the best our generation had seen on a British track. We leaned forward, stopwatches poised, as they shuffled into line to have their names checked. Twenty runners and 12,000 spectators went still for the English Amateur Athletic Association 3-mile championship.

**WE FOUR FRIENDS, ALL** young runners, watched from the White City stands. You got a good, though distant, view in that famed, faded old stadium. Built for the 1908 London Olympics, it held 100,000 spectators back in those days. It even had its own mid-field Olympic swimming pool where now the discus was in progress. In the 1960s, the down-at-heel stadium's main livelihood was from greyhound racing. The wire-fenced dog track and surrounding space for bookmakers' booths

made a big gap between the crowd and the track and field action.

"Set!" As the runners leaned forward, I had mixed feelings. I should have been crouched and eager down there among them. In my best track season so far, I'd beaten several of the English runners and twice gotten under the time standard. I was aggrieved about missing the cut for the championship. As things turned out, I was lucky. The race about to start would become a milestone in history, a defining drama best witnessed from the fervor of the stands, not from a position of unhappy struggle at the back of the field.

"First lap 62—[Geoff] North." I can still read the notes I made on the now-yellowing page of the championships program. I timed every lap. Stopwatches in 1965 were metal hemispheres that filled your palm, a black hand sweeping around the circular face. You wound the spring by a beveled knob on top, pressing the same knob with your thumb to start and stop. We carried them everywhere, as young runners now carry their cell phones.

"Lap 2, 2:07, Lindgren. Lap 3, 3:11, Clarke. Lap 4, 4:15.4, Lindgren." So says my long-treasured program. We expected it to be fast, but this was fantasy—8 seconds under world-record pace. No Olympic 5,000m final to that time had



The program from the 1965 English Amateur Athletic Association Championships.

The author, stopwatch in hand, scribbled splits and notes on his program as the record-breaking race progressed.



020 2:12 3:11 4:15.4 5:20.4 6:26 7:31.4 8:36  
North. Lindgren. Clarke. Lindgren Clarke. " (Clarke)  
36 Cl. Wiggs Clarke = 12:52!!

## Event 37

4.45 p.m.  
(Saturday)

## THREE

A.A.A. Standard: 13 min. 00.4 sec.  
Challenge Cup presented  
HOLDER: L. Bog

## Amateur Records:

World's Record: 13 min. 07.6 sec.—R. W. Clarke (Australia), at ratification 13 min. 00.4 sec.—R. W. Clarke (Australia), at Co UNITED KINGDOM (ALL COMERS'), UNITED KINGDOM (NATIONAL) AND —M. B. S. Tulloh, at Southampton, 17th August, 1961.  
Subject to ratification U.K. (National) Record—13 min. 8.6 sec. M.

## Best Championship Performance:

M. B. S. Tulloh (Portsmouth A.C.) 13 min. 16.0 sec. at White City,

1	ALTMANN, H.	Welwyn A.C.	17	TH
2	BENNETT, P.	Norway	18	LI
3	BRIAULT, T. J.	Ponders End A.C.	19	*L
4	CLARKE, R.	Australia	20	*M
5	COOKE, J. E.	Portsmouth A.C.	21	MI
6	DUGGAN, T. N.	Sparkhill H.	22	MI
7	FUGLE, O.	Norway	23	MI
8	GOWAN, M.	Herne Hill H.	24	NO
9	GRAHAM, D. A.	9th Old Boys H.	25	PR
10	HERRING, J. B.	Blackheath H.	26	ST
11	HILL, R.	N.C.A.A./Bolton United H.	27	*TA
12	HILLEN, J. J.	Saltwell H.	28	TU
13	HOGAN, J. J.	S.C.A.A.A./Polytechnic H.	29	WI
14	IBBOTSON, D. G.	Longwood A.C.	30	WI
15	JOHNSTON, T. F. K.	Portsmouth A.C./Achilles C.	31	WI
16	KELLY, D. B.	N.C.A.A./Derby & County A.C.	32	WI

1st Clarke 12 min. 52.4 sec. REC 4th Clarke  
2nd Lindgren 13 min. 04.2 sec. 5th Lindgren  
3rd Meocsér 13 min. 07.6 sec. 6th Meocsér

Intermediate Times, 1 Mile: \_\_\_\_\_ min. \_\_\_\_\_ sec. 2 M

STANDARDS (13 min. 55 sec.) Nos. \_\_\_\_\_

PRESENTA

been close to this speed. And it showed. As Lindgren and Clarke alternated in the lead, it took them less than four laps to turn that talent-loaded field of champions into a line of desolate stragglers. Wiggs tried to stay in contact, but by the end of the first mile even he was gone.

"Lap 5, 5:20.4, Clarke. Lap 6, 6:26, Clarke." Now it was Clarke in command—powerful, dignified, majestic. Lindgren was his shadow. Clarke's official world record stood at 13:07.6, and he had a recent unrated 13:00.4. Today, we calculated with disbelief, he was on pace for well under 13 minutes.

## OUT THERE ON THE BLACK CINDERS, IT WAS A NEW reality, even for champions.

"After running 4:18 for the first mile and going through halfway inside my PR pace at 6:33, I was burned off—as was everybody else," Tulloh says, reflecting on the race 50 years later. "Even then, we knew this was completely changing the landscape." Clarke was not as engrossed in lap times as we were,

with our overheating stopwatches.

"I didn't hear any of the lap calls," Clarke says. "I knew it was fast, but I was not thinking about the world record, just about winning. At first I thought it was great to have Lindgren helping to press the pace. Usually everyone else sat back and left me to dictate. But I started to think I would not be able to get rid of him."

Lindgren was in unknown territory for a 19-year-old not long out of high school.

"In high school, the gun goes off, you go. So I led much of the first laps," Lindgren says. "When Clarke raced around me, he really pushed hard, and most of those first 10 laps I wondered how long I could keep going. But I tried to match his stride."

At halfway Clarke began racing. He towed Lindgren through 2 miles in 8:36, only 3 seconds outside the British record. On the ninth lap the stubborn little American edged cheekily in front. Clarke watched him for a while, like a tiger looking at a mouse, then began to put in surges, raising the overall tempo to a destructive 63-second 10th lap.

"Not many observers discerned the surges, but there were three or four, each 50 to 90 meters, and they broke Lindgren's rhythm," Clarke says.

Lindgren confirms that the first surge was critical.

"On the ninth lap, Clarke eased up just a bit, which I welcomed," Lindgren says. "I was so tired. But then, going into a bend, he took off with a gust and before I could get my weary legs to go, he was several steps ahead. But I learned a good race strategy from him that day, as I used it to slow down many times in my racing career."

So Clarke was away, on his own, how he liked it best. He was sublime when he got free. At age 28, he ran with mature power—upright, rhythmic, and with an upper-body composure that set him apart from his greatest predecessors. Zatopek, Kuts, Pirie, Halberg, all ran tormented with effort, twisted and eccentric. Clarke's close-cropped head never bobbed and his arms never flailed. Calm, controlled, imperturbable—that's how he looked as we watched in awe from the stands. Against skinny, striving young Lindgren, he appeared like a sedate demigod brushing away an impertinent schoolboy.

364 9:42 10:46 11:51

Clarke Clarke — —

5 MILES

3 minutes 55 seconds

by the late Earl of Jersey

uszewicz (Poland)

Melbourne, 3rd December, 1964. (Subject to

mpton, Cal., 4th June, 1965.

A.A.A. NATIONAL RECORDS: 13 min. 12.0 sec.

E. Wiggs at Helsinki, 30th June, 1965.

14th July, 1962

FRITCH, M. West Germany

NDGREN, G. U.S.A.

OSLEY, C. R. Welsh A.A.A.

CAFFERTY, I. Motherwell Y.M.C.A. H.

ECSE, L. Hungary

ILNER, A. H. Walton A.C.

URRAY, A. F. Edinburgh University A.C.

ORTH, GEOF. A. Belgrave H.

ESLAND, L. R. Surrey A.C.

RONG, E. Bristol A.C.

YLOR, R. G. M.C.A.A.A. Coventry

ULLOH, M. B. S. Godiva H.

IGGS, M. E. Portsmouth A.C.

ILKINSON, W. Thames Valley H.

Longwood H.

Clarke

Clarke 13 min. 15.8 sec

Wilkinson 13 min. 17.4 sec.

Murray 13 min. 21.2 sec.

Miles: min. sec.

Tulloh 13a 13:48

TION



The frail-looking American, Gerry Lindgren, traded the lead with Ron Clarke during the first four laps, dropping the rest of the world-class field.

Opening Spread: Express/Hulton Archive/Getty Images; Above: Mark Shearman/RW Archives





Ron Clarke en route to bronze in the 10,000m at the 1964 Tokyo Summer Olympics, displaying "mature power—upright, rhythmic, calm, controlled, imperturbable."

ALL THE RUN-  
NERS IN THE  
WORLD WOULD  
HAVE TO  
RETHINK THEIR  
COMMITMENT  
TO RUNNING,  
AND **EITHER  
GIVE IT AWAY  
OR RAISE THEIR  
SIGHTS.**

But inner human reality may be different than appearances. Clarke nearly missed that race. Two days earlier, he says (unbeknownst to any until now), he had heard that his wife's mother was dying.

"I had three races to go. [My wife] Helen talked me out of flying back to Australia with her, saying there was nothing I could do except support her and she knew how well I had peaked," he says. "Frankly, I just wanted to get the run out of the way, compete in Oslo and Paris, and get back home to comfort Helen."

**NO MAN GOES INTO NO-MAN'S** land without paying a price. Though every writer called Clarke "relaxed," that's not how it felt to him.

"Believe me, I was hurting," Clarke says. "All my races felt hard. Whereas Zatopek, for instance, used to grimace as if each step was agony, I tried to develop a stoic appearance, so my opponents had little idea how tough I was finding it."

While Clarke looked serene, we spectators were going out of our heads. As he disposed of lap after lap, as the world record became an astonishing certainty, each sector of the crowd began spontaneously to rise to its feet when he went royally past. It was a sort of adoring wave 15 years before they were invented.

Then, in some unspoken way, we all felt the need to get closer to this great work of humankind. As if responding to the urgings of a charismatic prophet, we were drawn out of our seats and forward down the aisles. Through the last three laps, 12,000 people were clustered around the perimeter dog track fence. The high tiers of seating we had paid for were left empty.

We must have been whooping, but mostly I remember simply standing there, watching every stride in a sort of stunned awe. Clarke remembers the crowd's reaction.

"I began to think it must be fast when I saw many other athletes running across the dog track in excitement, and the crowd noise was deafening, so I knew I must be running something special. It added to my own excitement and helped me forget the pain," he says. "Adrenaline and pain are a heady mixture."

The last two laps belonged wholly to Clarke. Alone, he went striding into a new world. He kicked to a 60.1-second last lap, at last showing the effort. I clicked my windup stopwatch. The official time was 12:52.4.

**WHY WERE WE SO AWESTRUCK? PARTLY IT WAS** the sheer scale of the breakthrough. Roger Bannister in those days used to speak about records being broken by ever-diminishing fractions, yet here was a man who had hacked off 18 seconds from the world record as it stood only five weeks earlier (Murray Halberg, 13:10.0). Bannister's sub-4:00 mile was the climax to years of effort and debate. Clarke put the figure "12" in the book before anyone even thought of it as relevant.

Partly it was Clarke himself who compelled our admiration. At that date, he had not yet been condemned to go down in history as the man who couldn't win (as he later would be, after Olympic disappointment). He did win, often and well, as on this day. Lindgren ran 13:04, one of his best races, 6 seconds faster than anyone ever, except Clarke. Mecsér, in third, ran a tactically impeccable 13:07.6 to become the third-fastest man in history in the 3-mile. But both were confidently and skillfully beaten.

Clarke did it all by relentless training and fearless racing. He never dodged any opponent. In 1965, he raced 46 times, plus local club races in Melbourne. Tragically for 



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him, the 1966 Commonwealth Games were to be in the heat of Jamaica and the 1968 Olympics in the high altitude of Mexico City, where he nearly died and was given emergency oxygen on the track. It took Zatopek, in a now-revered gesture of generosity, to privately present Clarke with the Olympic gold medal he deserved.

Those disappointments lay ahead. In 1965, we knew only that Clarke was making that post-Olympic year a time of heady excitement. In 10 months, he broke 11 world records at eight distances, from 2 miles to 1 hour. He didn't just break those records; he transformed them. Only four days after he impelled us down to the fence at White City, Clarke electrified a different crowd—25,000 strong at Bislett Stadion, Oslo—with a 10,000m world record of 27:39.4. That hacked 34.6 seconds off the world record he had set only a month earlier. He passed 6 miles in 26:47, breaking the Lindgren/Mills mark by 24.6 seconds. That totals 70 seconds off world records in four days.

There has never been a one-man rampage like it. Even Paavo Nurmi and Haile Gebrselassie rank behind Clarke for the sheer scale and range of record breaking.

#### WE FOUR FRIENDS

went to a runners party in London that evening. We felt tipsy before we even left White City. Clarke's run intoxicated us, but we understood what it meant. The sport we loved and labored at was never going to be the same. All the runners at that party, and all the runners in the world, would have to rethink their commitment to running, and either give it away or raise their sights.

No more half measures or half effort, no relaxed

loping like the graceful distance runners on Greek vases. Instead, hammer past halfway a few seconds outside your best and then kick the last miles faster. Get strong enough to absorb extra distance with only minimal loss of pace. That was what we had to train for now. Bedford, Viren, Gebrselassie, Radcliffe, every great Kenyan marathoner—all have run in the image Clarke created 50 years ago.

"We were blown away, physically and mentally. Everyone had to change their ideas about what was a good time," Tulloh says.

This was not a comforting message for those of modest talent. Before July 1965, I had cut my 3-mile PR to within 40 seconds of the world record—close enough to dream. Suddenly, I watched Clarke move the top level of the sport beyond my imaginable reach.

Get over it, I thought. You didn't become a runner because it's easy. Ron Clarke showed us that great running can be a thing of wonder, a perfect fusion of body, mind, and spirit—something, as the old Greeks believed, that can put mere humans closer to the gods. Yes, the mountain was now higher, and farther away, but it was all the more worth trying to climb. That was what Clarke's run meant for me that night, and for 50 years it has never ceased to be true. **RT**

Clarke and Lindgren take the lap of honor after the race where Clarke ran a world record and Lindgren the American record.







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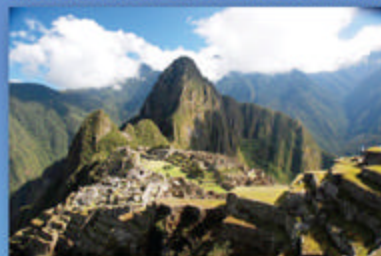
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1



2



3



4



5



6

- 1 / Brenda Martinez  
2013 Moscow
- 2 / Steve Scott  
1983 Helsinki
- 3 / Steve Spence  
1991 Tokyo
- 4 / Kara Goucher  
2007 Osaka
- 5 / Jenny Simpson  
2011 Daegu  
2013 Moscow
- 6 / Nick Symmonds  
2013 Moscow





# WORK- OUTS OF CHAMPIONS

What does it take to stand on the podium at the world championships? American medalists share their key track workouts, and coaches explain how you can make them part of your training.

BY PHILIP LATTER

◀ 2013 world championship bronze medalist Brenda Martinez runs at the Olympic Training Center in Chula Vista, Calif.



# WHEN

the world championships begin in Beijing in August, the athletes on the line will have maximized their fitness, trained for the demands of their events, and built the mental strength to stay engaged through the rounds of races. Each runner will have experimented to find his or her most effective workouts leading to a championship effort, and you can learn from their experience to hone your skills for a key race.

"Our sport is made up of many different coaches and philosophies, and every one of them is right," says Lee Troop, Boulder Track Club Elite head coach. "When you're standing on the start line, you realize this, with 100 different athletes having different training, diets, physical therapy, gym circuits, and equipment. The secret is finding what fits you best mentally, physically, and emotionally."

As the 2015 championships draw near, *Running Times* asked previous world championship medalists to tell us about a workout or series of workouts that was essential to their success. Their experience—when combined with the thoughts of two top coaches—may just help you achieve that peak performance you've been working for all summer long.

## BRENDA MARTINEZ

► 2013 Moscow  
Bronze, 800m

ESSENTIAL WORKOUT  
4 x 400m all-out

### HEADING INTO THE 2013 WORLD

championships, not a lot of people gave Brenda Martinez a chance at medaling. The Californian was known more as a miler, and pundits questioned whether she had the raw speed necessary to be a world-class 800m runner.

Those questions belied a simple fact—Martinez is fast. That speed was critical in a series of workouts coach Joe Vigil assigned in the weeks leading up to the 2013 Moscow world championships: 4 x 400m, all-out, with 7 to 9 minutes of recovery in between each interval.

"These workouts were not only physically tough, but I was told numerous times by Coach Vigil that I had to be mentally ready," Martinez says. Vigil wasn't kidding, as he helped Martinez push through splits

of 52, 55, 57, and 59 seconds for each 400m in her fastest session.

"That 52-second quarter was a confidence builder," she says. "I felt sharp. I remember going numb after that, and my legs felt like logs. I still ran 55. The remainder of the workout, I had to tell myself to give it my best and have the courage to push through the pain. The 57 and 59 splits were my race pace, but they surely were harder than that."

In Moscow, preparing for an exceedingly fast pace proved wise as American Alysia Montano attempted to sprint away from the field. At the halfway point, Martinez was still 2 full seconds down on the leader but had plenty of fight left. Coming into the homestretch, Martinez made the tactically risky move of cutting into Lane 1 during her final sprint, but it paid off as she passed a fading Montano in



the final strides to secure the bronze.

"When I did the all-out quarters, my husband would always yell out my competitors' names to get me fired up," she says. "I would envision myself slingshotting off the last turn. This workout helped me visualize what the race might be like."

## COACH'S THOUGHTS

Troop has used this same workout with his half-milers. "It is great lactic tolerance work," he says. "The first 400m [interval] accelerates the lactic and fatigue, and each subsequent 400m gets slower and slower, which replicates the fatigue that you can experience over the last 250m of a race."

Fast, intense workouts help the body become more efficient at buffering lactic acid, allowing you to run faster for a longer period of time. However, they need to be preceded by less strenuous speed sessions in the weeks leading up to the workout or the capacity for fast running will be lower. It's also critical to do a thorough warm-up—which for Martinez included a 2.5-mile progressive jog, stretching, drills, and strides—and to include a lengthy rest interval.

"Most times in the 800m, everyone is getting slower, but it is the person that slows down the least that wins," Troop says. "Being able to tolerate the lactic and fatigue buildup and maintaining form are crucial in how well you can close the race out."

Greg McMillan, founder of McMillan Running, says extensive speed sessions are ideal for athletes preparing for a road mile or a shorter track race because they improve economy and efficiency. "In the championships, you have to run fast while extremely fatigued," he says. "This workout provides exposure to this challenge."

## ON THE SURFACE, THE IDEA OF

competing on the European track circuit during the summer in some of the world's most beautiful cities seems too good to be true. London, Paris, Stockholm, and Monaco all host major meets and are cultural hubs. For middle-distance runners, though, sightseeing is superseded by a schedule packed with meets, often as many as two per week. That leaves little time for long training sessions, says Steve Scott, former U.S. mile record-holder.

"In Europe, the type of workouts you'd do would give you confidence in your speed, but not in the strength that it would take to run three rounds in three days," he says. "What I looked at more was how I was racing."

Before the inaugural Helsinki world

championships in 1983, Scott nailed three consecutive races: a 3:49 mile in Oslo, a 2:16 1,000m race, and an 800m race where he finished just behind American record-holder Johnny Gray. A bigger confidence boost came in London, where Scott defeated mile record-holder and Olympic champion Seb Coe in front of Coe's home crowd.

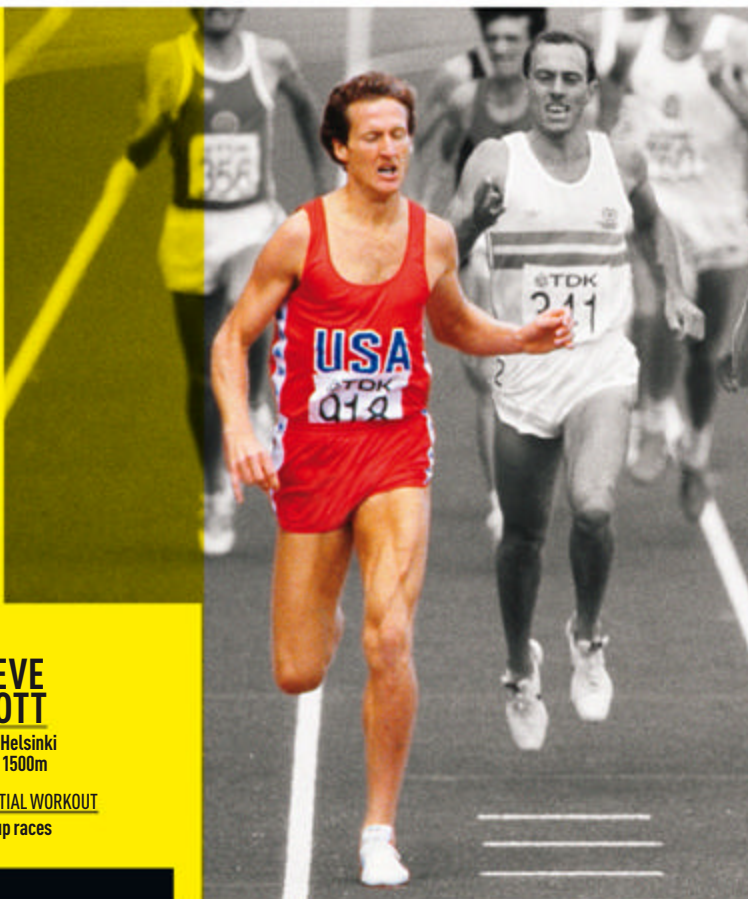
"It was a tactical race, which you find in a lot of championship races, and I was able to beat him over the last 400m," Scott says. "Even though he complained of having some bronchitis or some breathing issue, it doesn't matter; Coe doesn't race unless he's ready. To beat him, that gave me more confidence in preparation for the world champs."

At the time, Scott viewed the world championships as just another meet. ▶

## STEVE SCOTT

▶ 1983 Helsinki  
Silver, 1500m

ESSENTIAL WORKOUT  
Tune-up races







By the time he reached the final, he realized he was standing in one of the finest fields ever assembled. That didn't stop them from going out at a pedestrian pace—the first 800m were run in 2:07, slower than in the women's 1500m. This turned the race into a kicker's affair. Making his move a moment after Great Britain's Steve Cram, Scott settled for the silver off a blazing 52-second last lap.

"Running strong from the beginning, I was supremely confident I could have won," Scott says. "In a kicker's race, Cram just had better leg speed than I had. As I reflect back on it, I actually cherish that race. It's my only medal in a major championship, so I do feel very strongly about it."

## COACH'S THOUGHTS

Runners who like to race every weekend are wise to prioritize one race and consider others training, Troop says. "Using those races as training means you need to let your body recover," he says, "because you can't recover while you're racing and training that hard."

That doesn't mean Troop is averse to frequent races. His best athlete, 5,000m runner Laura Thweatt, set her PR of 15:04 after running a slow 5,000m, a road mile, and a 1500m in a two-week period with no quality sessions in between. He says runners like Thweatt and Scott feel more prepared and aware in their goal races because frequent competitions have primed them mentally for competition.

"Your body knows when you're freshening up and tapering," he says. "You need to go into these [tune-up] races slightly fatigued, run as hard as you can, get the benefits of those races, and then when you get to your main race, freshen up. There's a great physiological benefit, but also mental as well, as you should be raring to go."

## STEVE SPENCE

► 1991 Tokyo  
Bronze, marathon

ESSENTIAL WORKOUT  
2 x 20 minutes @ steady-state pace

### STEVE SPENCE KNEW THAT ONE

variable, more than any other, would affect the 1991 Tokyo world championships, held in late August: the weather. "Since conditions in Tokyo were most likely going to be extremely hot and humid, I prepared for endurance and somewhat neglected the speed aspect," Spence says. "As a 28-flat 10K runner, I didn't feel that a lot of speed would be necessary in order to maintain a 5:06 to 5:10 mile pace."

To meet that objective, Spence escaped his usual obligations at home in Pennsylvania by renting a cabin in Maine with his wife and 1-year-old daughter and running up to 140 miles per week in and around Acadia National Park during June and July. A typical training week included a long run over 2 and a half hours, a 90-minute aerobic threshold run performed just slower than marathon pace (roughly 5:20 pace for Spence), and a 2 x 20-minute steady-state run on the track with 5 minutes recovery between intervals.

Progressively increasing the pace during those steady-state workouts, which were run between half marathon and marathon pace, was the

hallmark of Spence's approach. "During each session, I strived to average 8 to 10 seconds faster per mile during the second 20-minute segment," he says. "In addition, I'd strive to run each mile of each segment a little faster than the previous mile." When Spence averaged 4:45 mile pace—the fastest of the six steady-state workouts he performed during his buildup—he did so by running 4:48, 4:46, 4:44, and 4:42 for his miles.

The steady state also provided the opportunity to practice the finer points of championship racing. Spence set up a table with 25 water bottles and rehearsed identifying and grabbing his bottles at the 1- and 3-mile points in each interval. With the bottle in hand, Spence swallowed 10 ounces of fluid without breaking stride.

That preparation paid off in Tokyo, where temperatures at the 6 a.m. start were already in the 70s, with high humidity. Spence started conservatively, allowing the leaders to hammer away at each other. "My goal was to finish in the top 10, and that is probably where I would have finished if the lead pack had been more conservative



and respected the fact that the conditions continued to deteriorate as the race progressed,” he says. “At the turnaround I could see that my turnover was already superior to the leaders, and it gave me confidence as I gave chase.”

Spence worked his way through the broken field all the way to a bronze medal, a testament to specific preparation and perhaps a special aid. “I did a lot of running on the carriage trails in Acadia in June and July,” he says. “The friends that I made in Maine attributed my success to being chased by black flies.”

## COACH'S THOUGHTS

If you're looking to incorporate steady-state runs into your training, start at a pace you could hold for a 2-hour race, McMillan says. As a 2:12 marathoner, Spence's steady states began close to marathon pace, but most runners find it to be 15 to 30 seconds per mile faster.

“Pace at the lactate threshold has been shown to be the No. 1 determinant of endurance performance,” McMillan says. “In this workout, [Spence's] runs were just below his lactate threshold, which helped push this threshold faster.”

The runs also promoted finding a good rhythm and progressively picking it up. “Everyone who has run a marathon knows that this is key to marathon performances,” McMillan says. “You must be able to groove goal pace so the first part of the race can be relaxed, but then you must increase the effort in the second half of the race to match the ever-increasing fatigue.”

## IT MAY BE HARD TO REMEMBER

a time when she was relatively anonymous, but Kara Goucher didn't become a household name until after she won a bronze medal at the 2007 world championships in Osaka.

Much like in Tokyo, conditions in Osaka were predicted to be hot and humid, making strength work more important than ever. Goucher and her former coach, Alberto Salazar, traveled to Park City, Utah, to train at high altitude (7,000 feet) in the weeks preceding the world championships. Leaving no stone unturned, Goucher did all of her shorter afternoon runs in a sauna suit or sweats to help her acclimate to the predicted conditions in Japan.

Sauna suits aside, it was a more conventional series of track workouts run at Brigham Young University [at the

comparatively lower altitude of 4,630 feet] that told Goucher she had the potential for a breakthrough in Osaka: 6 x 1600m in 4:50 to 4:55 with a 600m recovery jog. “I got confidence from the strength and speed I was showing,” she says. “Mile repeats were a workout I did yearly, so I was able to really see a difference in my fitness.”

In years past, Goucher had struggled to run five repeats in less than 5 minutes. Now capable of running six, she hoped to capitalize by placing higher than her prerace ranking.

“I was probably 15th or 18th on paper, so medaling wasn't something that I was thinking about,” Goucher says. “I just knew that I was much fitter than I had ever been and that I was going to go out there and take a risk. I was going to race up front for as



## KARA GOUCHER

► 2007 Osaka  
Bronze, 10,000m

### ESSENTIAL WORKOUT

6 x 1 mile @ 10K goal pace





long as possible and see what happened.”

With temperatures hovering in the high 80s, the leaders went out conservatively in Osaka, hitting the 5K in 16:30. From there the race gradually accelerated, with Goucher’s second 5K run in 15:31—the exact pace she had practiced in Utah. That strength allowed her to kick a 65-second final 400m and break away from New Zealand’s Kim Smith and Great Britain’s Jo Pavey to win the bronze.

“Osaka was a dream come true, but it didn’t really play out how I ever could have imagined,” she says. “I wasn’t even trying to win the last lap, just get into third. Looking back, I was closing in on second, but my mind couldn’t think that big yet.”

## COACH'S THOUGHTS

Mile repeats near 10K pace have long been a staple in many training regimens and for good reason, McMillan says. At this intensity, runners practice race pace, target their  $VO_2$  max and lactate threshold systems, and increase their confidence by putting themselves through a session that closely mirrors what they’ll face on race day.

“This is a perfect ‘gut check’ workout,” McMillan says. “While the pace may feel fast but controlled on the first one or two repeats, the last few will be very tough mentally as well as physically. This is exactly what the runner faces in a 10K, and this type of workout trains the brain to deal with intense suffering as much as it trains the physiology of the body.”

McMillan advises most runners to start with only three or four mile repeats at 10K pace. Build on that foundation. If you choose to keep the number of intervals low, consider upping the pace ever so slightly—a session of 4 x 1 mile at 5K or 8K pace offers an equally tough challenge.



## JENNY SIMPSON

➤ 2011 Daegu  
Gold, 1500m  
➤ 2013 Moscow  
Silver, 1500m

### ESSENTIAL WORKOUT

3- to 4-mile threshold run

### NO ONE LIKES TO THINK THAT THE

best day of her life was a fluke, but when Jenny Simpson won the 1500m world championships in 2011, that assumption lingered, even for her. Simpson had been a steepler until 2010 and, despite running under 4:00 for 1500m as a collegiate runner at Colorado, was not considered a contender on the world stage. Even in that championship race, it wasn’t until the final 200m that Simpson contemplated winning.

After a dismal 2012, Simpson

switched back to her college coach, Mark Wetmore, and began redeveloping her stamina through one of her favorite workouts: a 3- to 4-mile tempo run on the track. For all the time she spends practicing hitting splits in her shorter intervals, these longer workouts let her focus more internally.

“A threshold run for me is much more about perceived effort,” she says. “I bring to the run all the work and baggage of the weeks of training, and my body gets to give me all the feedback. The reason this run is a big confidence-

## COACH'S THOUGHTS

Troop is a big believer in this quote from Craig Mottram, a great Australian 5K specialist: “It doesn’t matter how fast you are if you’re not there with a lap to go.” Performing frequent tempo runs is a great way to ensure you have the requisite stamina to survive the bulk of a race.

“What the tempo does is get you to

feel like you’re on top of the workout for the duration of it,” Troop says. “If you get 5 to 7 minutes in and all of a sudden you start going backward, getting slower, that’s highlighting that you’re tired, you’re not on top of your training, and you’re not going as well as you’d like heading into racing.” Troop likes to

start his athletes between marathon and half marathon pace for the first few kilometers and then slowly pick up the pace over the course of the run. Feeling strong and like you could have run faster and farther is the sign of a good tempo, Troop says, and indicates your stamina is improving. The controlled pace also

minimizes stress on the body and allows you to focus on other workouts during the week.

“Even though Jenny is only racing for 4 minutes, being able to run a steady effort for 15 or 20 minutes shows that she’s strong,” he says. “A good tempo tells her she has the strength necessary to kick with a lap to go.”

builder for me is because I think it plots out the trajectory of my training in a comparative way that shows me that I'm getting more fit or that I've dug a hole of fatigue and I need to recover."

Simpson likes that she's able to look back on 10 years of consistently doing tempo runs and see her improvement. That decade of strength work came in handy the summer of 2013 in Moscow, when Simpson found herself leading the race early and decided to take charge of the pace. Pushing as hard as she could, she broke all but Sweden's Abeba Aregawi. Repeating as a medalist in those games proved Simpson was no fluke and left her ruminating on how she got there.

"Reflecting on the years of threshold runs I've done and thinking about how they get just a few seconds better each year makes me see my world championship medals as representing very small improvements that have accumulated over many, many years," Simpson says. "I didn't get as good as I am overnight, and I didn't take any shortcuts. I am grateful for any improvement, no matter how small, and when I put all of those improvements together into a summer season, I'm proud that they add up to silver and gold."

#### EVER SINCE HE EMERGED FROM

tiny Willamette University to win the 2008 U.S. Olympic trials 800m, Nick Symmonds has relished the role of being an underdog. That continued in 2012, when Symmonds made the Olympic final in the 800m and ran an incredible 1:42.95—only to place fifth behind David Rudisha's world-record performance.

Not content to let history repeat itself at the 2013 world championships, Symmonds polished off his training plan with a viciously fast workout: 6 x 200m, close to all-out, with 3 minutes rest in between.

"I remember being able to run them all around 23 [seconds], which is really fast for me," Symmonds says. "We spend the vast majority of the year working on strength, so I am never really that sharp. It isn't until the final few weeks of a season leading into a championship race that I allow myself to really transition into being a sprinter."

With Rudisha sidelined by injury, fellow American Duane Solomon pulled the field through relatively quick splits of 23.5 seconds at 200m and 50.28 at 400m. By then Symmonds had patiently moved up to Solomon's shoulders and,

emboldened by his fresh infusion of speedwork, he began to pull away from the field over the last 200m. Only a big kick by Ethiopia's Mo Aman kept Symmonds from gold, but earning a championship medal at last validated Symmonds' place in the event.

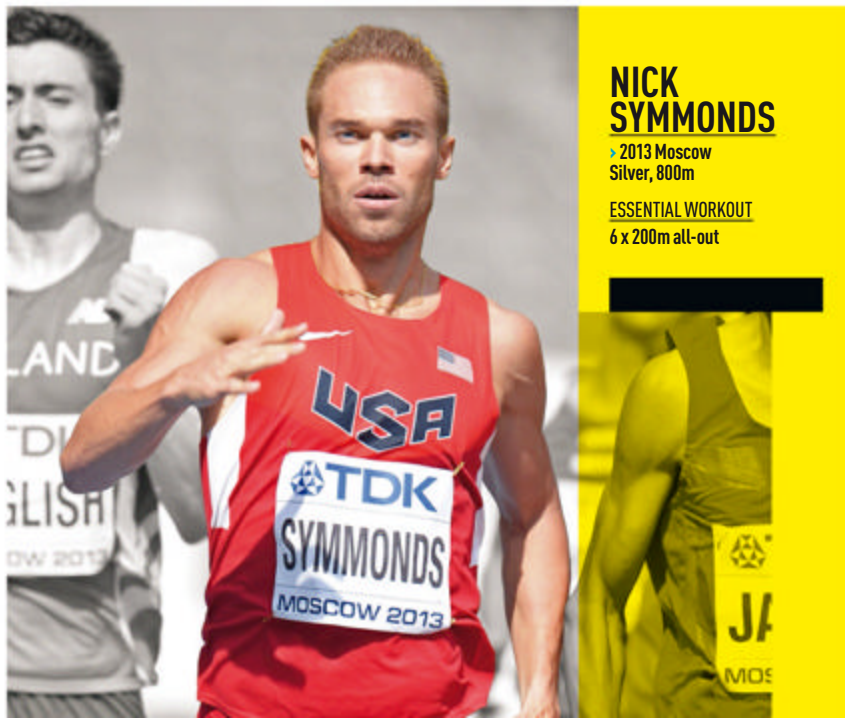
"No single workout makes or breaks a season or even a race, but there are certain boxes that need to be checked along the way," he says. "There were workouts that had prepared me for the 6 x 200 workout earlier on in the season, but it wasn't until I spiked up and rocked them that I knew I was ready to kick with the best in the world."

#### COACH'S THOUGHTS

A session where you put your body through the demands it's going to face during a race helps you better deal with the sudden onset of fatigue and increases your efficiency at those paces. "Whenever you watch an 800m race, those guys are always heading out and running 48 or 49 seconds for the first 400, which is sub-1:40 pace," Troop says. "As soon as they get up onto the back straight, all of a sudden it's like they've been hit by a truck. They overstride and really stretch themselves."

These sessions don't need to be all-out 200s; Troop likes to finish off a workout of 5 x 1K @ 5K pace with a small set of 2–4 x 400m at mile pace to help his 5K athletes prepare for a fast finish.

For Symmonds, this type of workout translated into a beautiful kick. While his competitors tied up by going out too fast, Symmonds drew on his reservoir of strength and speed to medal. "The more efficient you can be at the start of a race, the more energy you're conserving for when the real heart of the race starts," Troop says.







YOU CAN STAND THE

# HEAT

**As temperatures rise, running  
doesn't need to be a total suffer-fest.  
Here's what to expect and how to prepare  
for the summer ahead.**

**By Richard A. Lovett**

**Illustrations by Alexander Wells-Folio Art**

However many bad-weather-will-make-you-tougher quotes we collect, there's still one aspect of weather that most of us do our best to dodge: heat. Bolstered perhaps by health warnings every time the mercury climbs into the red zone, many of us do everything we can to avoid it: running at dawn or in the late evening or even seeking shelter on air-conditioned treadmills. ¶ It is, however, possible to run in heat. In the 1996 Atlanta Olympics, Portuguese distance star Maria Fernanda Moreira Ribeiro set an Olympic 10,000m record under hot, humid conditions (82 degrees with 60 percent relative humidity, according to historical data from Weather Underground). In the process, she posted a time of 31:01.63—one that 16 years later would still have put her in the top 10 in the much more temperate conditions of the London Olympics. ¶ The bottom line is that the human body is remarkably adaptable to heat. In fact, says Lawrence Armstrong, a heat researcher at the University of Connecticut, its ability to adapt to high temperatures is faster



and more dramatic than its ability to adjust to any other environmental stress that nature can throw at us, such as altitude or cold.

¶ In a paper in the January 2015 issue of *Comprehensive Physiology*, Daniel Lieberman suggests that our heat tolerance probably results from the fact that our ancestors evolved to hunt and forage at midday on the African savannah—a time of day at which, if you are heat tolerant enough to handle it, you are relatively safe from less heat-tolerant predators. Since then, humans have dispersed all across the globe, but wherever we live, he suggests, we still largely retain these ancient heat-tolerance genes. ¶ “Heat is a paradox,” Lieberman says. “On the one hand, we evolved to run in heat. But on the other, if one is not well-adapted, it can be mighty dangerous.”

¶ Even if you are well acclimated, heat will slow you down. Here’s a guide for what to expect as the thermometer rises.

## 50–59°

Most runners don’t think of these temperatures as hot—but the longer the race, the more the heat will affect you.

In a 2007 article in *Medicine & Science in Sports & Exercise*, a team led by exercise physiologist Matthew Ely studied decades’ worth of elite and sub-elite marathon performances at temperatures ranging from 41–77 degrees Fahrenheit. What they found was surprising: Even at temperatures of 50–59 degrees there was a slight drop in performance, comparable to about a 1- to 2-minute slowdown for a 2:10 elite, depending on whether the race was at the top or bottom end of this temperature range. For 3-hour males, the slowdown amounted to 4–8 minutes. (Slower runners weren’t included in the study.) A recent review by the French National Institute of Sport and Physical Education of nearly 2 million marathon finishers found that the optimal temperature for male pros was below 40 degrees.

There are several reasons for this. For one thing, Ely’s study used temperatures at the start of the race, which means a race that started at 59 degrees could have finished at 70 degrees.

Physiologically, running in heat produces a cascade of reactions that begin with the fact that our muscles aren’t all that efficient. In fact, says Yannick Molgat-Seon, who spent more than two years at the University of Ottawa’s Thermal Ergonomics Laboratory, 80 percent of the energy generated by our muscles winds up as heat.

In cold weather, that inefficiency is what keeps us warm. But during exercise, the body has to get rid of it. One way is by sweating. “Less obvious,” Molgat-Seon says, “is promoting blood flow to the skin.” That’s important because it’s what carries excess heat from your muscles to the skin, where it can be lost to the environment.

But the body only has so much blood. “You have a competition between blood going to the skin and blood to the active musculature,” Molgat-Seon says. “In that battle, the muscles always lose.” Even when you’re barely sweating, your muscles are getting less oxygen and therefore are less efficient.

## 70–79°

At these temperatures, Matthew Ely’s elite marathoners slowed down by 3 minutes, with the sub-elites losing 20 minutes.

Brett Ely experienced this when she ran the 2010 Miami Marathon in humid 71-degree temps.

## 60–69°

These are the temperatures at which most start to view conditions as less than optimal.

The Run SMART Project calculator by Jack Daniels, author of *Daniels’ Running Formula*, calculates that at 69 degrees, a 40-minute 10K runner can expect to be slowed down by 1.7 percent (a bit more than 6 seconds per mile).

For marathoners, Ely’s study finds another 1- to 4-minute slowdown for top-level elites and 3-hour men, respectively. However, some people are simply genetically better in heat, meaning that in any given study there will be considerable variability.

The moment you start running in heat, rather than avoiding it, your body quickly begins to adapt in multiple ways. Within a week, Armstrong says, your blood plasma volume starts expanding. That may increase your weight by a pound or two, but it gives you that much more fluid to sweat away without dehydrating. It also makes it easier for the body to supply blood to the skin without excessively reducing the flow to the muscles.

Another adaptation is that you start to sweat earlier in your workout (or race), as your body learns to anticipate the

upcoming buildup in core temperature and takes preemptive measures to stave it off.

You also begin to sweat more profusely.

Your sweat becomes less salty, as the body works to conserve sodium. And your heart rate slows down slightly at any given effort level, allowing the heart to fill more completely between beats, thus having more blood to pump out. “That’s called stroke volume,” Armstrong says. “With each beat, you’re pushing more blood, not only to exercising muscle [but] to cool the body.”

Even your perception of hot-weather running effort changes, Armstrong says.

Amazingly, he adds, all that’s needed is about eight to 14 days of heat training. Brett Ely, Matthew’s wife, also spent several years as a heat researcher at the Army research station in Natick, Massachusetts, looking for optimal protocols to train soldiers for deployment to Iraq. Ultimately, she concluded that it could be done in as little as 10 days. “Start gradually,” she says, “rather than overheating yourself. If you were going to high altitude, you wouldn’t do a hard workout on the first day. You’d ease into it.”

She thought she was in 2:40 shape, but knew better than to attempt it. She backed off and ran 2:45:36, winning the race and beating a woman who had run 2:38. “I think the reason I was successful was that I didn’t try to run my goal pace,” she says.

Brett Ely’s triumph reflected something else shown by her husband’s data: Women fare better in heat than men. By Matthew Ely’s charts, the average 2:45 male marathoner would have lost



## HEAT PREP 101

AS THE TEMPS  
RISE, REMEMBER:

- 1 ▶ Even when it's cool enough that you're barely sweating, your muscles are getting less oxygen and therefore are less efficient—an important factor in longer races.
- 2 ▶ Instead of avoiding heat during training, help your body adapt to it. Within a short time your system will become more efficient, as it learns to anticipate the rise in core temperature.
- 3 ▶ When heat and humidity start to creep higher, it's best to slow down. Your performance relative to the competition will often be better (though slower) if you remain conservative.
- 4 ▶ If you are working on acclimating to warm temperatures expected on race day, remember to back off two days prior to the competition to make sure you're not over-stressing your body.
- 5 ▶ Hydrate wisely. Use electrolyte supplements if needed to avoid dangerous imbalances. Train to consume more liquids to build resistance to dehydration.

## 80–89°

There comes a point when additional sweating doesn't do you any good. "When you're dripping sweat, there's lost water as opposed to lost heat," Molgat-Seon says. You also begin to run into the limits of not only your body, but of physics: There are conditions in which no matter how efficiently you sweat, it won't evaporate fast enough to keep pace with the rate at which you are generating heat. Your only alternative is to slow down.

"Basically, when the air temperature exceeds 80 degrees and the humidity exceeds 70 percent, you will find that performance drops markedly," Armstrong says.

Acclimating to do the best that's possible under these conditions requires dedication. In 2013, when the USATF outdoor nationals were held in Des Moines, Kim Conley, who lives in Sacramento, California, spent her last two weeks of training in the Midwest, getting used to the combination of heat and humidity. (Race day would eventually serve up a starting-time temperature of 80 degrees with 60 percent humidity.) "My training is almost always geared around preparing for a specific racing environment," she says.

But just as runners taper off their workout volume before important races, Conley also backed off her heat training in the day or two immediately prior to the race, trusting that the adaptations had already taken place and what she now needed to do was make sure she didn't enter the race over-stressed. It worked. Conley ran 15:37.80—not her best, but good enough to get her onto the U.S. world championship team.

more than 10 minutes to the heat.

The most likely explanation is that women, being smaller than men, have a higher surface-to-mass ratio—something that allows them to shed heat more efficiently to the environment.

It's not just women who can benefit from being petite. In the men's marathon at the Atlanta Olympics (run at a starting temperature of 74 degrees with 90 percent relative humidity), the winner,

South African Josia Thugwane, weighed only 99 pounds. The silver medalist, Lee Bong-ju of South Korea, was also small, weighing 123 pounds.

And the correlation between heat and body size doesn't only affect marathoners. In laboratory experiments conducted shortly before the 2004 Athens Olympics, exercise physiologist Tim Noakes, author of *Lore of Running*, had two groups of men run 8K time trials on treadmills.

One group weighed 110 pounds or less. The other averaged 130 pounds. In cool temperatures the two groups were about equal, but when the room temperature was jacked up to 95 degrees, the smaller men were 45 seconds per mile faster than their larger counterparts. The concept applies at less extreme temperatures: The larger you are, the more strongly you will be affected by heat—so adjust your pace appropriately.

## 90°+

The hotter it is, the harder it is to excel. In 2007, Kara Goucher became the first American ever to medal in the 10,000m in a world championship. She knew that Japanese summers are notorious for hot, humid conditions, and race day in Osaka was no exception. "[It] was humid and stifling," she says, remembering 88 degrees with high humidity.

But she'd also prepared for it, doing summer track workouts in tights and long sleeves, as well as easier runs in "sauna suits—jacket and pants that were basically like rubber." She went to Japan two weeks before the race. "By race day, I knew I could handle it," she says.

The key to racing in outrageous conditions, adds Badwater 135 veteran Greg Pressler, is thinking about everything that might affect your performance, whether it's monitoring pace or your choice of clothing. Stints in a sauna can also help with acclimation. Meanwhile, it's also useful to work on hydration, even for shorter races. "I'm a big proponent of Pedialyte in an effort to top off the electrolytes, while also ensuring maximal hydration," University of Iowa cross country coach Layne Anderson says. It will pay off with larger blood volume and greater resistance to dehydration.

It's also possible to train yourself to drink more liquids. (Take the right electrolyte supplements so you don't create dangerous imbalances.) You won't be able to exceed one liter per hour, but most people aren't used to consuming even that much, Pressler says, which means that in training for hot conditions, it's easy to dehydrate.

The keys to not only surviving a hot race, but doing well, boil down to "hydration, practicing the conditions, and getting there early," Goucher says. **RT**



A  
RUNNING  
LIFE

## Paula Radcliffe

MARATHONER,  
MOTHER,  
ANTI-DOPING ADVOCATE

INTERVIEW BY CATHAL DENNEHY

» In 2003, Paula Radcliffe set the marathon world record of 2:15:25 in London. Although her time hasn't been threatened in 12 years, Radcliffe's career had its highs and lows, and she never took home the Olympic medal that had once seemed inevitable. Now 41, she has retired from competition; in April she enjoyed an emotional lap of honor at the London Marathon, finishing in 2:36:55. As she steps away from racing, she reflects on a life that has always been defined by running.

I used to join my dad on runs when I was 8 years old. He was doing marathons at the time, and I always remember just liking the feeling of running.

When I set the world record, I finished the race and thought I could run faster, but you only have that small window where you're really able to hit the peak performances. I was lucky I got that in London, but I didn't get that again. I could say, on that day, I couldn't have given any more.

Sometimes I need to chill out and take a step back, but I'm a perfectionist in a lot of things I do. If I'm going to do something, I'll do everything in my

control to make sure I get it right.

Going into a race, the person who puts the most amount of pressure on you is yourself. The only time the expectation and support from the public is a burden is when you're not right, when you're injured and already doing everything you can, but then you've got more pressure from other people. That's when it gets hard.

We live in Monaco, and I have more friends here than I've had at any other point in my life. For the kids, this is the only home they've ever known. We like the weather, we like the lifestyle and being able to be

outdoors for so much of the year, so we haven't got any reason to relocate.

This is a beautiful sport, but it suffers at the hands of drug cheats in terms of athletes not being able to compete on a level playing field and people watching not being able to believe in performances.

If you feel strongly about something, then you need to stand up, be counted, and stand by what you believe in. That's why I've always been outspoken. I might move into something in anti-doping, to put my money where my mouth is and work in an area where I feel passionately. We need to protect our sport and protect the athletes.

I want to try to give back to the sport. At the moment, I help out with my daughter's athletics club, and I really enjoy doing things like that. I wouldn't really call it a job. It's more pleasure.

My children definitely show interest in running because it's part of their lives. You actually see a joy in Raphael's face when he's running that I can relate to, whereas Isla's just ultracompetitive. When she's running, she's running to just beat everybody else.

My body can't do hard training anymore. I know my foot can never be the same as it was. It took me a while to get my head around it, but if you give me the choice between

being able to run and being competitive again, then I'd take just being able to run for the next 20, 30, 40 years.

The last mile of [my final] marathon, I was so tired, but I wanted to thank as many people as possible. There were signs saying, "We'll miss you," but it's not as much as I'll miss them. It was so loud. I wanted it to last forever.

I think even if your body doesn't allow it, in your mind you're always a runner, even if it's under-water or on the cross-trainer. It was only when I didn't have that in my life that I realized how important a part of me it was and what a gift it was. I'll always continue to run. **RT**

### HIGHLIGHTS

Winning world cross country championships in 2002 was a really special day. I've been lucky. I've had several days where it felt like things clicked, like when I came close to breaking 30 minutes for 10K in Munich (in 2002), or when I ran 8:22 for 3K in Monaco (in 2002).

### LOWLIGHTS

I would have loved to have had an Olympic medal, but you can't go back and change things. I was never able to perform as well as I could in the marathon at the Olympics. It's probably the thing that's missing and [it] hurts the most, but then there are so many other things that I never even dreamed I would get. I'm a big believer in no regrets.



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### MID-ATLANTIC

**Sun, 09.20.15**

**Navy Air Force Half Marathon  
& Navy 5 Miler**  
WASHINGTON, DC  
Half Marathon & 5 Mile Run

CONTACT: Joint Base Anacostia Bolling MWR,  
12 Brookley Avenue,  
Washington, DC 20032.  
[navyairforcehalfmarathon@gmail.com](mailto:navyairforcehalfmarathon@gmail.com)  
[navyairforcehalfmarathon.com](http://navyairforcehalfmarathon.com)

**Sat, 11.14.15**

**Anthem Richmond Marathon**  
RICHMOND, VA

Marathon, Half Marathon & 8K

CONTACT: Race Director,  
100 Avenue of Champions,  
Richmond, VA 23230.  
804.285.9495  
[marathon@sportsbackers.org](mailto:marathon@sportsbackers.org)  
[richmondmarathon.org](http://richmondmarathon.org)

### MIDWEST

**Sat, 09.26.15**

**Akron Marathon (Rubber  
City Race Series)**  
AKRON, OH

Marathon, Half Marathon, Team  
Relay & Kids Fun Run

CONTACT: Brian Polen, Race Director,  
453 S. High St., Suite 301,  
Akron, OH 44311.  
877.375.2278  
[info@akronmarathon.org](mailto:info@akronmarathon.org)  
[rubbercityraceseries.org](http://rubbercityraceseries.org)

### NEW ENGLAND

**Sat, 10.03.15**

**New Hampshire Marathon**  
BRISTOL, NH

Marathon, Half Marathon & 10K

CONTACT: Dan Maclean,  
30 N. Main St.,  
Bristol, NH 03222.  
603.744.2713  
[race@nhmarathon.com](mailto:race@nhmarathon.com)  
[nhmarathon.com](http://nhmarathon.com)

### SOUTH

**Sat, 09.26.15**

**Whistletop Half Marathon**  
IRONDALE, AL

Half Marathon, 5K & 1 Mile

CONTACT: Faye Yates,  
2315 Eugenia Ave.,  
Nashville, TN 37211.  
615.415.3520  
[races@team-magic.com](mailto:races@team-magic.com)  
[team-magic.com](http://team-magic.com)

*Part of Whistletop Festival*

**Sat, 11.14.15**

**36<sup>th</sup> Annual Chickamauga  
Battlefield Marathon**  
FORT OGLETHORPE, GA

Marathon, Half Marathon,  
5K & Jr. Marathon (1M)

CONTACT: Jenni Berz,  
P.O. Box 11241,  
Chattanooga, TN 37401.  
423.954.9262  
[marathon@chattanooga-trackclub.org](mailto:marathon@chattanooga-trackclub.org)  
[battlefieldmarathon.com](http://battlefieldmarathon.com)

*Boston Qualifier, 2015 RRCA  
Georgia State Championship.*

**Sat, 11.28.15**

**Kaiser Realty By Wyndham Vacation  
Rentals Coastal Half Marathon**  
ORANGE BEACH, AL

Half Marathon & 5K

CONTACT: Faye Yates,  
2315 Eugenia Ave.,  
Nashville, TN 37211.  
615.415.3520  
[races@team-magic.com](mailto:races@team-magic.com)  
[team-magic.com](http://team-magic.com)

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**Sat, 12.12.15**

**Rocket City Marathon**  
HUNTSVILLE, AL

Marathon

CONTACT: Suzanne Taylor,  
2722 Carl T. Jones Drive, Suite 2B,  
Huntsville, AL 35802.  
256.520.0768  
[suzanne@fleetfeethuntsville.com](mailto:suzanne@fleetfeethuntsville.com)  
[runrocketcity.com](http://runrocketcity.com)

**Fri-Sun, 01.15.16-01.17.16**

**Louisiana Marathon**  
BATON ROUGE, LA

Marathon, Half Marathon,  
Quarter Marathon, 5K & Kids Run

CONTACT: Danny Bourgeois,  
721 Government St., Suite 103, Box 295,  
Baton Rouge, LA 70802.  
504.669.1530  
[danny@thelouisianamarathon.com](mailto:danny@thelouisianamarathon.com)  
[thelouisianamarathon.com](http://thelouisianamarathon.com)

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**Sun, 01.17.16**

**Naples Daily News Half Marathon**  
NAPLES, FL

Half Marathon

CONTACT: Perry Silverman,  
224 6<sup>th</sup> Ave. South,  
Naples, FL 34102.  
678.777.5622  
[psilverman@aol.com](mailto:psilverman@aol.com)  
[napleshalfmarathon.net](http://napleshalfmarathon.net)



## ART OF THE RUN



The Ethiopian team celebrates after sweeping the podium in the women's 10,000m final on Aug. 8, 2005, in Helsinki, Finland. Winner Tirunesh Dibaba (hip No. 1) became the first woman to win both the 5,000m/10,000m in the same world championships. Her elder sister, Ejegayehu Dibaba (white hair band), took third place, while compatriot Berhane Adhere (second, on the ground) rounded out the medals. Werknesh Kidane (hip No. 6) took sixth.



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